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**SUITABLE OR NON-SUITABLE? AN  
INVESTIGATION OF EUROZONE SME  
ACCESS TO MARKET-BASED FINANCE**

Paola Bongini, Annalisa Ferrando, Emanuele Rossi  
and Monica Rossolini

**FINANCIAL ECONOMICS**



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# SUITABLE OR NON-SUITABLE? AN INVESTIGATION OF EUROZONE SME ACCESS TO MARKET-BASED FINANCE

## Abstract

The present paper provides in-depth analysis of SME access to capital markets among Eurozone countries. First, we detect the factors – at the firm and country level – that are able to influence the likelihood of SME access to market-based finance. Second, we construct an index of what we call “market suitability”, i.e., a score that can be measured at the dimensional, sectoral and national level, which provides the percentage of firms potentially fit for market-based finance. Our results highlight that a few Eurozone countries seem to have deployed the “potential” for capital market financing, while there exists a large percentage of unexploited potential for firms fit for market-based finance. It should also be highlighted that overall business conditions - measured by GDP growth, the degree of development of domestic financial markets, and the quality of the legal and judicial enforcement system - greatly influence a firm’s market suitability. In the period under consideration (2000-2014), macro factors tended to reduce the likelihood of SME access to market-based finance in most countries in our sample

JEL Classification: G32, G10, L25, L26

Keywords: market-based finance, SMEs, Eurozone

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## **Suitable or non-suitable?**

### **An investigation of Eurozone SME access to market-based finance<sup>1</sup>**

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April 2017

#### ***Abstract***

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## **1. Introduction**

Across euro area markets, SME financing conditions are highly heterogeneous; additionally, SMEs face more obstacles in gaining access to finance compared to large firms. Unlike larger firms, their financial structure is more dependent on bank loans due to asymmetric information problems, shorter operating track records (ECB, 2014a) and limited use of alternative sources of financing (Berger and Udell, 2006; Stiglitz and Weiss, 1981; Jaffe and Russell, 1976). Given SMEs' particularly strong dependence on bank financing, the well-known fragmentation in financial markets has become a serious obstacle for SMEs, with implications for their ability to pursue investment opportunities as well as economic growth.

An assessment of the obstacles hindering SMEs' access to finance cannot avoid considering their limited participation in capital markets, both equity and bond markets. Recent studies (Ferrando and Mulier, 2014; ECB, 2014b) have shown that, in times of economic downturns or financial crisis, bank lending decisions become more selective on the basis of banks' balance sheet constraints and the rising default probabilities of their borrowers. In comparison to larger firms, SMEs are typically perceived as having a higher probability of default and, additionally, as being more informationally opaque, they are more likely to be penalized in times of heightened bank risk aversion (Berger and Udell, 2006).

The available evidence shows that trade credit, leasing and factoring are closer substitutes of bank loans (ECB, 2014c). As these latter alternative financing sources are, however, closely related to SME business activity, the potential for substitution may largely be constrained during recession periods by a decline in turnover levels; this applies primarily to SMEs located in distressed countries. In this context, debt securities and new equity issuances could achieve strong relevance in SME financing.

Corporate bond financing is an important substitute for bank financing, particularly during a financial crisis, when banks may be unwilling or unable to lend, but such substitution has not been operating uniformly across the EU (ECB, 2014c). A more integrated European market for corporate bonds would help firms raise funds. Fund raising by issuing equity to investors across borders is also commonly considered to be

a stable source of financing. The close integration of European corporate bond and equity markets would therefore be beneficial.

Despite a range of policy initiatives at the national level, substantial fragmentation in the SME market based on financing persists across euro area countries and in particular for SMEs located in distressed countries (ECB, 2014c). As the wide dispersion in financing conditions is likely influenced both by borrower risk or other borrower characteristics and by conditions and environments in domestic capital markets, a comprehensive research effort aiming to address SME capabilities in accessing market-based financing is still lacking, and greater understanding on this issue could help further policy measures to mitigate discrepancies and foster integration in these market segments, particularly in the context of the current Capital Markets Union (CMU) agenda (European Commission, 2015). To the best of our knowledge, empirical research on this topic is lacking and our paper intends to fill this void.

The present paper provides in-depth analysis of the factors that facilitate SME access to market-based financing solutions among Eurozone countries.

The paper tackles two main research questions:

- a) What factors – at the firm and country level – are able to influence the likelihood of SMEs gaining access to market-based finance?
- b) How many firms are suitable for market-based finance at the firm's size, sectoral and national level?

Our contribution to the debate on SME capital structure and access to capital markets is twofold.

First, contrary to the existing literature on capital structure that focuses on firm leverage, we are able to directly investigate the choice of raising new equity and/or issuing bonds. In fact, our analysis is based on a proprietary dataset that matches the responses of small and medium firms to the Survey on Access to Finance of Enterprises (SAFE) from 2009 to 2015 with detailed financial statements<sup>2</sup>. In particular, we focus on survey participants' answers to questions relating to access to capital markets funding: the dependent variable used in our empirical analysis is the firms' decision to

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<sup>2</sup> Comprehensive databases on actual market-based issuances are available from professional financial data providers (such as Reuter's Thomson One and Dealogic), but they have some drawbacks for our research purposes, as they cover mainly market-based financing of listed firms, with negligible coverage of unlisted SME financing.

raise new equity and/or issuing bonds. SAFE covers micro, small, medium-sized and large firms, and it provides evidence across branches of economic activity, euro area countries, firm age, and ownership of firms. The database containing the survey replies is then matched (using the tax identification code) with the Bureau van Dijk Amadeus dataset, which includes information on balance sheet and profit and loss accounts

Second, through the estimation of a firm's probability of accessing market-based finance, we are able to construct an index of what we call "market suitability", i.e., a score that can be measured at the firm's size, sectoral and national level, providing the percentage of firms potentially fit for market-based finance.

Our empirical results disclose a number of firm-specific and country-specific factors capable of influencing the likelihood of Eurozone firms' access to market-based finance. We detect a positive relationship between the use of equity and bond issuances and some firm-specific characteristics such as the size of the company, its listed status, its growth opportunities and its leverage. Several country-specific variables also influence the likelihood of a firm using market-based funding. In particular, the degree of development of domestic capital markets (i.e., equity market capitalisation over GDP), economic performance (GDP growth) and the ratio of domestic credit to the private sector over GDP are positively related to the use of market-based finance. The quality of the legal and judicial enforcement system also matters – a strong judicial and legal system (measured by variables such as the rule of law, duration of dispute resolutions and property rights) positively influences access to market finance.

Finally our research is able to identify which SMEs are suitable for access market-based finance. A few countries in the Eurozone have already deployed their 'potential' for capital market financing, but there remains unexploited potential in the large percentage of firms fit for market-based finance, especially in the medium-sized segment. Our empirical analysis highlights, however, that when we consider the real context in which firms operate (including institutional characteristics of the business environment), this 'market suitability' is somehow reduced. In some countries the reduction is negligible (or even inexistent), but it is relevant for others.

The paper is structured as follows. Section 2 reviews the related literature; Section 3 describes the explanatory variables used in the analysis; Section 4 presents the data and methodology and Section 5 discusses the results. Section 6 concludes.

## 2. Related literature

The academic literature on small business finance is vast and has grown since the recent financial crisis and recession. Among the core issues related to small business finance<sup>3</sup>, two are particularly pertinent to our analysis and help frame the contribution of the present paper. First, the life cycle of small business finance, i.e., the fact that different forms of SME financing are connected and influenced by the life cycle of the firm itself. Second, the capital-structure choices of SMEs, taking into account their peculiarities with respect to larger firms.

### *The life cycle of small business finance*

Our work is grounded in a set of studies that apply the life cycle paradigm to the financing decisions of SMEs and large corporations (Carey et al., 1993; Meyer, 1998; Berger and Udell, 1998). Exploring a number of facets of US small firm finance, Berger and Udell (1998) elaborated a growth cycle paradigm in which different capital structures are optimal at different points in the life cycle of a firm. In particular, different sources of debt and equity finance become important at different stages of the firm's growth, with a hierarchy that starts with insider (internal) finance, moves towards angels and venture capitalists first and then commercial banks, and ending with public bonds and public equity.

The authors warned against the use of this paradigm in every small business situation; however, the life cycle has received considerable empirical support, although not always verified (Robb and Robinson, 2012 in the US). The paradigm emphasises the importance of age, size and informational opacity of the firm as these (intertwined) characteristics explain a firm's capital structure choice. The older the age, the larger the size and the lower the informational opacity of a firm, the broader the spectrum of financing sources available to the firm. On the contrary, small firms and new ventures that cannot credibly convey their quality or experience difficulties building reputations to signal their quality or overcome their initial informational opacity are the most dependent on internal finance.

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<sup>3</sup>Core issues that we do not address include the role in the transmission of monetary policy, bank market structure, the effect of M&As and the potential impact of financial institution consolidation on the availability of credit to small business, and private ownership versus public ownership.

Our study contributes to this debate by estimating a firm's probability of accessing market-based finance while controlling for these life-cycle characteristics – age, size and informational opacity (proxied by the listed status of the firm) and other firm and country characteristics.

#### *The capital-structure determinants of SMEs*

Although the issues surrounding capital structure for small businesses generally differ from those that are most important for large corporations, the choice between debt and equity has been studied with the same methodologies and theories applied to large, listed firms. Capital structures of firms are usually explained in the literature by certain firm characteristics – profitability, tangibility, size, business risk, growth opportunities, etc. – stemming from three factors that may influence a firm's leverage: trade-off considerations between bankruptcy-related costs and tax advantages; agency conflicts between managers and shareholders and between debt and equity investors; and asymmetric information between lenders and borrowers. These three factors are connected with three theories of capital structure (static trade-off theory, agency theory and pecking order theory) that explain firm leverage based on the same firm-level determinants while examining their influence through different lenses. For instance, trade-off theory predicts a positive relationship between profitability and debt as a result of debt tax-shields that induce profitable firms to use more debt (Jensen and Meckling, 1976; Myers, 1977; Harris and Raviv, 1990). However, according to pecking order theory (Myers, 1984; Myers and Majluf, 1984), the relationship is negative, as more profitable firms have more retained earnings to count on, which are viewed as a firm's preferred source of funding.

Another example refers to the predicted relationship between growth opportunities and leverage. According to agency theory (Jensen and Meckling, 1976), growth opportunities and leverage are negatively related: the disciplinary role of debt over managers' opportunistic behaviour works at its best when firms face a low growth phase and investment opportunities with positive NPV are scarce. In this phase, debt can help shareholders to motivate managers to be more efficient (Jensen, 1986). On the contrary, according to pecking order theory, leverage and growth opportunities are positively correlated. The sequencing of funding described in the previous section can

be explained in the context of pecking order theory, which suggests that the financing decisions of firms are influenced by their informational opacity since the cost of financing increases with asymmetric information. As managers/owners know more about their business prospects and risks than outside investors, asymmetric information affects the choice between internal and external financing and between the issue of debt or equity. Therefore, firms prioritise their sources of funding according to a pecking order, first with a preference for internal funds – retained profits or funds from the entrepreneur and other insiders that possess superior information about the firm – over external funds and then with a preference for debt over raising new equity. Hence, companies with good growth opportunities but a lack of internal funds prefer to issue new debt (and increase leverage) instead of issuing new equity.

Pecking order theory can be easily applied in the context of SMEs since small- and medium-sized enterprises are often opaque and their creditors bear high information costs and face important adverse selection problems (Ang, 1991; Holmes and Kent, 1991; Cosh and Hughes, 1994; Hall et al., 2004; Daskalakis and Psillaki, 2008; Psillaki and Daskalakis, 2009). Moreover, SMEs are often owner managed, which, on one side, cancels agency conflicts between owners and managers and, on the other side, introduces other elements into the capital structure decisions of small businesses, such as the owner's level of risk aversion or his willingness to minimize the risk of losing control and decision-making power. For these reasons, SMEs prefer retained earnings, followed by trade credit and bank financing, over market-based sources of funding. Finally, tax considerations are of less relevance for SMEs because these firms are not as profitable as larger firms, and therefore, the tax reasons for using debt are less likely to apply (Pettit and Singer, 1985).

Several studies document that a firm's leverage is also affected by industry-specific factors (McKay and Phillips, 2005; Kayo and Kimura, 2011) and country/institutional-specific factors (Rajan and Zingales, 1995; Demircuc-Kunt and Maksimovic, 1999; Booth et al., 2001; Claessens et al., 2001; Giannetti, 2003; Hall et al., 2004; de Jong et al., 2008; Daskalakis and Psillaki, 2008; Beck et alia, 2008; Psillaki and Daskalakis, 2009).

Although firm-specific variables have a greater impact in explaining cross-country or cross-industry variation in the determinants of capital structure, a number of

institutional variables – such as legal enforcement, creditor and shareholder protection rights, and the development of the financial system (bond, stock and bank markets) – are nonetheless found to significantly influence firms' leverage.

As highlighted by de Jong et al. (2008), it should be noted that most existing studies implicitly assume that the impact of firm-specific factors on capital structure is equal across countries. However, as demonstrated by their research, firm-specific factors can differ across countries, and this should be correctly taken into account in the research design.

Our paper is related to this vast literature, although we add a different perspective, taking into consideration the choice of market-based finance. In this sense, we expand and update our knowledge on SMEs' capital structure decisions as we do not limit ourselves to the choice between equity and debt. Indeed, as highlighted by Berger and Udell (1998), the distinction between insider (internal) finance and external finance in small business is not always completely clear since insiders often give personal guarantees or pledge personal collateral against external debt provided by financial institutions (mainly commercial banks). For this reason, we distinguish between non-market-based finance (trade credit, bank lending, leasing, factoring and insider funds) and market-based finance (bonds and equity).

We also depart from the existing literature in the choice between syndicated loans and corporate bonds (Altunbas et al., 2010, for instance) as its focus is primarily on listed large companies.

### **3. Market suitable firms: Explanatory variables.**

To capture the features that can help explain a firm's propensity to issue market-based instruments, we lever on those variables that traditionally have been used to explain firm capital structure. Pecking order theory (Myers, 1984; Myers and Majluf, 1984), for example, postulates that firms rank internal finance above external finance: however, the theory does not address the ranking between (external) bank lending and other external market-based instruments (both debt and equity), a decision that can be quite relevant, in particular from the SME perspective. Therefore, we need to consider those firm-specific factors that can capture this added dimension of a firm's financial choices.

Below, we discuss explanatory variables used in the empirical research, starting with firm-specific financial and demographic characteristics.

### ***3.1 Firm-specific variables***

#### *Size, age and listed status*

Size is a very common variable in empirical studies of firms' capital structure and is typically measured as the logarithm of sales. Size is usually expected to hold a positive relationship with leverage (i.e., debt): larger firms are more diversified and hence less likely to face bankruptcy; are more profitable and therefore more likely to use debt for tax shields; and finally, are less informationally opaque so that they can issue larger amounts of debt, spreading the associated issuing costs.

In our context – in which we consider the use of market-based finance – size is expected to have a positive relationship with long-term debt (bonds) for the reasons described above. Less clear is the relationship between size and the likelihood of new equity issues. Static trade-off theory predicts a lower use of equity; and asymmetric information theory argues that larger companies are more capable of issuing informationally sensitive securities like equity (Rajan and Zingales, 1995). Finally, according to the life cycle paradigm, larger firms tend to tap financial markets more in order to fund their financial needs. Overall, we expect to have a positive effect on market-based funding choices.

Similarly, not easily predictable is the relationship between age and market-based finance. According to the life cycle paradigm, larger companies – living their maturity phase – tend to have higher leverage ratios, as equity investors are less interested in firms with lower growth opportunities, lower risk and lower profitability. On the other hand, older firms are better able to accumulate (internal) funds and, hence, less in need of long-term or short-term or equity-based finance.

Listed status of a firm is a dummy variable that takes a value of one for listed firms and zero for unlisted, private firms. We consider it a proxy for a firm's informational opacity directly linked to a higher (lower) degree of financial disclosure in the case of listed (private) firms. The listed status of a firm is expected to have a positive effect on market-based finance.

### *Asset structure*

Asset ratios can be relevant for market-based finance as they capture the structure of a firm's assets and the way such a structure influences the composition of the firm's liabilities. We include two structural features of firms' assets: tangibility and the ratio of fixed assets to equity.

Tangibility, measured as fixed assets over total assets, represents a standard variable in empirical studies on firms' financial choices (Hall et al., 2004; de Jong et al., 2008; Daskalakis and Psillaki, 2008). Asset tangibility is commonly expected to have a positive effect on leverage, as it reduces the direct cost of bankruptcy. Unlike intangible and current assets, tangible assets can be easily used as collateral, mitigating the lender's risk. Hence, a large fraction of tangible assets is expected to be associated with higher debt. In our analysis, asset tangibility is expected to have a positive effect on debt securities funding, while we have no *a priori* expectation regarding its effect on new equity raising.

The ratio of fixed assets to equity is a measure of a firm's ability to manage the maturities of its assets and liabilities. It is not commonly employed in the standard corporate finance literature. We believe that, in our context, it can be helpful to test whether the market-based funding choice of SMEs can be driven by their need to fix potential imbalances at the balance sheet level, i.e., the long-term fixed asset requirements that are not sufficiently matched with permanent equity financing. The ratio of fixed assets to equity is expected to have a positive effect on market-based finance (both bond and equity). The higher the ratio, the greater the need to tap long-term market-based funding solutions.

### *Performance ratios: profitability, liquidity and growth.*

Among the firm's performance variables, profitability and liquidity<sup>4</sup> are the main variables employed to explain firm capital structure.

There is no consensus in the literature regarding the role of profitability in capital structure. Levering on information asymmetry considerations, it is customary to deploy profitability variables (more profitable firms are associated with less leverage) and

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<sup>4</sup> We use as a liquidity measure the current ratio, i.e., current assets divided by current liabilities. Profitability is the EBITDA over total asset

liquidity proxies (accumulated cash and other liquid assets – the so-called cash equivalents - serve as internal sources of funding and are used first instead of debt). Both variables are commonly expected to have a negative effect on leverage. Static trade-off theory, on the contrary, predicts a positive relationship because high profitability decreases bankruptcy risks and also increases the tax shields of debt. However, these benefits are less of an issue for SMEs as already explained: SMEs tend to be less profitable and the tax reasons for using debt are less likely to apply.

In our framework, the expected relationship is negative because when internal funding is available through higher profitability, tapping capital markets – bonds and equity - proves to be less of a necessity.

However, in the case of liquidity, the expected sign could be quite unclear in the SME setting. Even if pecking order theory suggests that accumulated cash should be used before any other source of external finance, the higher informational opacity that smaller firms bear and the negligible (or lack of) reputational capital that they hold can require SMEs that desire to tap capital markets to offer good fundamentals to prospective investors. Otherwise, they would risk weak demand in their market-based forays. In this sense, we can expect a positive effect of liquidity on external market-based finance (lack of reputational capital effect).

As above, there is also no consensus in the literature regarding the role of growth opportunities and firm capital structure. Growth opportunities are normally linked to agency conflicts between stockholders and bondholders: growth opportunities can produce moral hazard situations (asset substitution) and push firms to take on risks at the expense of creditors. To minimize these conflicts, firms with high growth opportunities choose lower leverage, thus preferring equity financing for their new projects instead of debt financing. Growth opportunities are thus expected to be negatively associated with firms' leverage and debt securities issuances and positively associated with new equity raising. On the other hand, high-growth opportunities are likely to exhaust internal funding and compel firms to seek external finance. According to pecking order theory, when external finance becomes a necessity, firms issue non market-based debt, and then they issue securities; when all else fails, the company issues equity.

Whatever the case, market-based finance (bonds or equity) is positively associated with growth opportunities.

In our analysis, we employ two indicators of firm growth performance related to sales (average turnover growth) and assets (fixed asset growth).

#### *Risk and tax considerations*

According to trade-off theory, financial risk is expected to reduce the ability of a firm to use debt to finance new projects. We proxy financial risk with leverage and financial pressure. We define financial pressure as the ratio of interest paid over EBITDA, while leverage is financial debt (both short and long term) over a firm's total assets.

Leverage and financial pressure are expected to have a positive effect on new equity raising: They compel firms to reduce the perceived bankruptcy-related costs associated with excessive levered positions. Meanwhile, the effect on debt securities issuing remains less clear.

Finally, taxation is proxied by the effective tax rate, and its impact on market-based finance is expected to be positive in the case of debt securities (for debt tax advantages reasons) and negative in the case of equity.

### **3.2 Country-specific variables**

In keeping with the large body of literature discussed previously (see Section 2), we include in our empirical work a set of country-specific (or institutional) explanatory variables. They comprise features related to the economic growth and degree of financial development of the countries under investigation and the characteristics of the institutional environment in which firms operate.

#### *Financial development and growth variables*

The first group of country-level variables - equity market capitalization over GDP and bond issues by non-financial firms over GDP - attempts to capture the degree of development of domestic capital markets segments. Greater width, depth and liquidity of capital markets (bond and equity) are expected to facilitate firms' access to market-based finance (Kayo and Kimura, 2011). The development of bond and stock markets should increase the supply of funding available to firms and lower their cost of capital.

The ratio of domestic credit to the private sector over GDP represents a widely used measure of banking system development (King and Levine, 1993). The ratio can portray the degree of a country's dependence on bank credit, and as a consequence, it should crowd out equity and bond issues. Alternatively, excessive dependence on bank credit can promote, in the life cycle of a firm, the diversification of external funding sources, in particular in a period of bank distress and generalized credit crunch.

From a different perspective, bank credit can be seen as a signal of creditworthiness that is especially relevant for informationally opaque firms, which thanks to this credit can more easily access capital markets. This view of a positive link between bank credit and other funding sources is supported by empirical evidence on the relationship between financial development and economic growth. Indeed, the development of both capital markets and the banking system are together important factors explaining the economic development of a country.

Finally, we include the GDP growth of each sample country as a measure of economic growth, which drives firms' real investments and determines the need for external finance.

#### *Legal and judicial enforcement systems*

It is well documented that certainty of the law and legal rights enforcement in the courts have a positive impact on firms' access to external finance (La Porta et al., 1997; Beck et al., 2005; 2008). Indeed, if the laws better protect both shareholders and bondholders (and other creditors), agency problems among different financial stakeholders are reduced, improving firms' access to market-based finance (de Jong et al., 2008)<sup>5</sup>.

We consider the following variables as a proxy for the strength of the legal and judicial enforcement system: the rule of law index, the property rights index, the number of procedural steps involved in a commercial dispute and time needed to resolution.

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<sup>5</sup> Firms that operate in a country with weak creditor protection and low-quality judicial enforcement systems may even face a competitive disadvantage with respect to firms located in a country with strong protection and high-quality judicial enforcement systems (Maresch et alia, 2016).

The rule of law index is sourced from the World Bank's WGI<sup>6</sup> and captures perceptions of the extent to which agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, property rights and the courts as well as the likelihood of crime and violence. In our context, a higher indicator score is expected to promote firm access to capital markets.

The variable Property Rights is derived from the "Index of Economic Freedom" as computed by the Heritage Foundation. This variable measures the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. Hence, it measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated. The more certain the legal protection of property, the higher a country's score (the score is between 0 and 100). We expect a positive relation with firms' capital market access.

For the number of procedural steps involved in a commercial dispute, we use data provided by the World Bank in the "Doing Business" dataset. A procedural step is defined as any interaction, required by law or commonly used in practice, between the parties or between them and the judge or court officer. Other procedural steps, internal to the court or between the parties and their counsel, are counted as well. Procedural steps include steps to file and serve the case, steps to assign the case to a judge, steps for trial and judgment and steps necessary to enforce the judgment. A higher number of procedural steps involved in the judicial enforcement system should be linked with reduced access to external capital markets funding.

Finally, for time needed to resolution, we again rely on the "Doing Business" dataset by the World Bank and use the variable that records the average time needed to resolve a dispute in calendar days. The time is counted from the moment the plaintiff decides to file the lawsuit in court until payment. It includes both the days when actions take place and the waiting periods between them. In our context, the longer the time to resolve a dispute, the higher the probability that firms are denied credit, in particular from the banking sector. In this sense, diversifying external funding through capital

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<sup>6</sup> Detailed documentation of the Worldwide Governance Indicators (WGI) interactive tools for exploring the data and full access to the underlying source data are available at [www.govindicators.org](http://www.govindicators.org).

markets can help avoid credit constraints that might arise in the bank-firm relationship (hence, an assumption of positive relation in the regressions).

Table 1 summarizes our list of firm-specific and country-specific variables.

## **Data & Methodology**

### **4.1 Data**

The analysis is based on a proprietary database that collapses in one dataset information from the Survey on Access to Finance of Enterprises (SAFE) and from Bureau van Dijk Amadeus. The ECB's SAFE covers micro, small, medium-sized and large firms<sup>7</sup> and provides evidence across branches of economic activity, euro area countries, firm age, and ownership of firms. The database containing the surveyed firms has been matched (using the tax identification code) with the larger Amadeus database in order to link the qualitative answers of the firms in the survey with their financial statements. Our sample includes information for the following Eurozone countries: Belgium, France, Finland, Germany, Italy, Spain and Portugal.

Data refer to the period from September 2009 to September 2015 (waves 2 - 13 from the SAFE)<sup>8</sup> and take into account about 50,000 firms. Our sample is composed of 29.2% micro-sized firms, 32.8% small firms, 28.8% medium firms and only 9.3% large firms (see Table 2).

Table 3 and Figures 1 and 2 present the proportion of firms that declared to have used market-based instruments (equity and debt) for each country in our sample<sup>9</sup>. The reported figures are all weighted with sampling weights that restore the proportions of the economic weight of each size class, economic activity and country in order to make them representative of the underlying population of firms.

Figure 3 exhibits the details of capital market involvement over time of both SMEs and large firms' subsamples across SAFE waves. Germany, Belgium and Finland are the countries in which firms have used market-based instruments more often. All

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<sup>7</sup> SAFE firms are only non-financial corporations (NFC). Size is based on number of employees. Micro firms are defined as firms with less than 10 employees, small firms are firms with 10-49 employees, medium firms are firms with 50-249 employees, and large firms are firms with 250 or more employees.

<sup>8</sup> Amadeus-sourced financial statement data bridge up to the 2014 financial reports.

<sup>9</sup> Some changes in the questionnaire may have caused a break in the series on equity for German firms as it went from "Kapitalbeteiligung in Ihrer Firma" (wave 2) to „Eigenkapital“ (wave 3) and then to „Anteilskapital“ (wave 4). For this reasons, percentages in wave 3 are calculated as averages of those in wave 2 and wave 4.

other countries are left behind. The difference between leading and lagging countries is mainly explained by new equity issuances, while on debt securities, we spot a less pronounced gap (Table 3, Panel A and Figure 1).

Firms from distressed Southern Europe countries (Italy, Spain and Portugal) show lower involvement in market-based instruments, both at the overall sample and SME subsample level (Table 3 and Figure 1 and 2).

These differences, between core and periphery Eurozone countries, are more pronounced in equity-level funding, particularly for SMEs (Figure 2).

Tables 4 and 5 report the descriptive statistics and correlation coefficients of the explanatory variables.

## **4.2 Methodology**

We use a weighted Probit model to answer our first research question: what factors influence the likelihood of SME access to market-based finance?

The dependent variable is a dichotomous variable that takes a value of 1 if firms report having used market-based instruments (new equity or debt securities) in the previous six months according to the SAFE survey definition<sup>10</sup> and 0 otherwise.<sup>11</sup> Our dependent variable is qualitative in nature as it captures the ability/willingness of the firm to access market-based finance. We do not observe an equilibrium quantity: the use of a questionnaire, as in the literature on credit crunches, should help frame the demand curve with no fear of mixing together supply and demand factors. However, as a robustness check, before estimating our probit model linking SAFE survey data (left-hand side) and the characteristics of the firms and countries on the right-hand side, we controlled for potential constraints on the supply side. In particular, our dependent variable is regressed on a firm-level indicator of financial constraints. This indicator is the sum of the percentages of firms reporting (still through SAFE questionnaire) rejections of loan applications, loan applications for which only a limited amount was granted, and loan applications that resulted in an offer that was rejected by the firms owing to too-high borrowing costs, in addition to the percentage of firms that did not

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<sup>10</sup> In the case of equity, the survey definition is listed or unlisted new share issuances or other forms of equity provided by the owners themselves or by external investors, including venture capital or business angels but excluding mezzanine finance in terms of preferred stocks. In the case of debt securities, we have short-term commercial paper and long-term corporate bonds.

<sup>11</sup> The variable is based on question Q4 of the SAFE questionnaire.

apply for a loan for fear of rejection. The estimated coefficient of the indicator of financial constraint is never significant in any of the specifications applied<sup>12</sup>. Therefore, we feel quite confident that our dependent variable observes mainly, if not totally, demand-side factors.

In the Probit equation we estimate the probability that firm  $i$  use market-based instruments in year  $t$  using the following model:

$$\text{Prob}(\text{Mark\_fin}_{i,k,t} = 1) = F(\alpha + \beta_1 (\text{FirmChar})_{i,t-1} + \beta_2 (\text{InstVariab})_{i,t-1} + \beta_3 \text{wave}_t + \beta_4 \text{Country}_k + \beta_5 \text{sector} + \varepsilon_{i,k,t}) \quad (1)$$

where  $\text{Mark\_fin}$  are the responses by firm  $i$  in country  $k$  at time  $t$  that indicate the use of market-based instruments in the previous six months. It is a binary variable which takes value one if firm have used market-based instruments and zero otherwise.  $\alpha$  is constant term,  $\text{FirmChar}_{i,t-1}$  is a vector of firm specific variables,  $\text{InstVariab}_{i,t-1}$  is a vector of institutional/(country) variables (discussed in Section 3 and reported in Table 1). All variables are lagged to avoid endogeneity. We control for country, sector and time fixed effects.  $F(\cdot)$  is cumulative distribution function which is standard normal distribution function  $\Phi$ . As in the descriptive statistics, we use the sampling weights in the econometric specifications. It is important to stress that in the SAFE database around 70% of surveyed firms were present in only one wave; less than 20% were present in two consecutive waves and the remaining ones in three consecutive years. In this respect, we do not have a proper panel dimension that allows us to exploit firm-level effects in our analysis, as only a very small number of firms were present in consecutive survey rounds.

In the next stage of our analysis, we create a Market Suitable Indicator (MSI indicator) to answer our second research question: how many firms in a country are suitable for market-based finance? The Index attempts to capture firms considered suitable for market-based financing using information derived from their financial situation, country characteristics and SAFE replies analysed in the first phase of the analysis.

The construction of the index is based on two steps.

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<sup>12</sup> We also included firm-level financial statement information. The results are available from the authors upon request.

In the first step, the coefficients of the estimated probit ( $\beta$ s) can be used to compute a predicted SAFE score for the larger pool of firms of the Amadeus dataset using the following equation.

$$\begin{aligned} \text{SAFE}_{i,k,t} \text{ score} = & \alpha + \hat{\beta}_1 (\text{FirmChar})_{i,t-1} + \hat{\beta}_2 (\text{InstVariab})_{i,t-1} + \hat{\beta}_3 \text{wave}_i \\ & + \hat{\beta}_4 \text{Country}_k + \hat{\beta}_5 \text{sector} \end{aligned} \quad (2)$$

where the estimated coefficients are those reported in Table 6, panel A. This is a score defined at the firm level, which varies across time.

As the values of the score cannot be directly interpreted, we use it only to rank firms and classify them as market suitable and non-market suitable according to whether they exceed a certain threshold. In particular, following the approach used in Ferrando et al. (2015), we obtain a threshold over the SAFE score distribution using the information from the survey data. Namely, we select the top x% of the distribution of the SAFE score by country, where x is the percentage of firms that declared in the survey to use market-based instruments over the period 2009-2015. Finally, for each year and country, firms suitable for market-based financing are identified as those with a value of the SAFE score greater than the threshold.

As a result, our Market Suitable Indicator (MSI) is a dichotomous variable equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. We calculate this index for the entire sample of firms in the Amadeus database for our seven sample countries. In this way, we are able to investigate, at the country level, the potential for market-based financing. We identify countries, sectors and firms that are more suitable for capital market financing.

The usefulness of this procedure is that it can also be used to calculate the index before the beginning of the survey as well. When we analyse the evolution of the MSI index before 2009, we should therefore be fully aware of two underlying assumptions: i) The estimated coefficients are time-invariant, as is often the case for widely used indicators proposed in the literature<sup>13</sup>; and ii) the threshold is fixed over time. Nevertheless, as the period of the SAFE survey (2009-2015) under investigation covers a timespan in which capital markets in the Eurozone were severely hit by the sovereign

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<sup>13</sup> For instance, examples of derived weighted combinations of time-varying coefficients are the Whited-Wu index (Whited-Wu, 2006) and the Kaplan-Zingales index (Kaplan and-Zingales, 1997).

debt crisis, we believe that applying these coefficients backward (starting from the year 2000) should generate reasonably conservative estimates of our indicator<sup>14</sup>.

#### 4. Results

We group our results in three parts: In the first section (5.1), we comment findings related to only firm-specific variables; in the following section (5.2), we discuss our results when also including country-specific variables; in the third part (section 5.3), we present evidence based on our novel survey-based MSI index.

##### *5.1 Main findings when considering only firm-specific variables*

Table 6 shows the results of the probit regressions<sup>15</sup>. Panel A reports the estimated coefficients, and Panel B shows the marginal effects. Columns 1 and 2 identify which firm-specific variables affect the use of market-based instruments for our sample of Eurozone firms. With respect to the first column, the second specification includes as controls the country fixed effects on top of sector and time dummies. Hereafter, we use this specification in the subsequent steps of our analysis<sup>16</sup>.

Amongst the variables considered in the regressions, size, profitability, current ratio, average turnover growth, financial leverage, and listed status are statistically significant.

Firm size has a positive effect on the use of market-based instruments in line with life cycle theory. The negative sign of profitability is consistent with the pecking order theory applied to SMEs: less profitable firms have less internal cash flow to use for funding their activity; therefore, they need more external financing.

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<sup>14</sup> We checked the actual volume of bond and equity issuances of the European NFC firms during the 2000-2015 period, and from 2009 onwards, the proceeds amount of issuances is lower than previously. This is the case particularly for IPOs and secondary equity issuances, less so for corporate bonds. See RELTIF Green Paper, Restarting European Long-Term Investment Finance A Green Paper Discussion Document, (2015), CEPR Press, Chap. 4, pp. 33-37.

<sup>15</sup> Table 6 exhibits only variables that are statistically significant, omitting to present all other variables that we have tested in alternative specifications.

<sup>16</sup> We have tested the presence of country differences using a chi-squared test. First, we considered a restricted model in which we included only firm-specific variables without considering the presence of potential differences across countries; subsequently, we analyzed an unrestricted model in which country dummies have been inserted in order to take into account conceivable differences between countries. Through a chi-squared test, we have verified the null hypothesis that all countries' coefficients were equal. The result of the chi-squared test allows us to refute the null hypothesis: Chi-squared (6) = 112 Prob>chi<sup>2</sup> = 0.0000. Under these circumstances, we adopt the unrestricted model with country dummies, which takes into consideration country differences.

The interpretation of the sign of the current ratio is less straightforward. We detect a positive relation between firm solvency and the use of market-based instruments. Considering the fact that our database is focused mainly on SMEs, we can explain this positive relationship with a lack of reputational capital. SMEs that desire to tap capital markets are therefore required to offer good fundamentals to prospective investors; otherwise, they incur the risk of weak demand in their securities offerings. This feature coupled with the negative relation observed in the profitability variable can explain why a good current ratio performance must be achieved by SMEs via less short-term financial debt rather than surplus cash and cash equivalents (which, indeed, would negate the pecking order theory assumptions). It is a well-known fact that SMEs, particularly in Southern European countries, have been mostly dependent on excessive and increasing short-term debt financing<sup>17</sup> from the banking system.

Financial leverage, listed status and turnover growth coefficients present signs in line with our assumptions.

In sum, we can expect a higher probability of accessing market-based finance for large, listed firms that have future growth opportunities and are more leveraged and that are able to compensate lower profitability with a proper level of safety/solvency (via a reassuring current ratio due to less short-term financial debt)<sup>18</sup>.

## ***5.2 Main findings including country-specific variables***

Columns 3 and 4 of Table 6 display the probit regression statistics including the country-specific variables that may influence the likelihood of SME use of market-based funding. Results on firm-specific variables hold in sign and dimension, while a number of country-specific variables turned out to be statistically significant. Column 3 summarizes the specification model with sampling weights, whereas the results in column 4 are not weighted<sup>19</sup>. Moreover, we applied a series of tests to check the

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<sup>17</sup> The excessive dependence on short-term bank financing for distressed country SMEs has increased, particularly in the aftermath of the Eurozone sovereign debt crisis since 2011.

<sup>18</sup> We must remember that our analysis combines as market-based funding both new equity and bond financing. In this sense, it should not be too surprising that creditworthiness indicators such as a current ratio can be relevant for prospective bond investors.

<sup>19</sup> We use the specification with sample weights to compute our novel MSI index according to the methodology already discussed for the restricted model with only firm-specific variables.

predictive power and goodness of fit of our model specifications; the results were reassuring<sup>20</sup>.

The country-specific variables related to the degree of development of domestic capital markets proxied by equity market capitalization over GDP were found to be statistically significant and positively related to the likely use of market-based finance together with economic (GDP) growth and domestic credit to the private sector over GDP.

We observe that three variables of the strength of the legal and judicial enforcement system have a statistically significant positive sign (rule of law, time needed to dispute resolution, and property rights), and a fourth, the number of procedural steps, has a negative sign. The signs of regression coefficients are in line with our assumptions summarized in Table 1. In this sense, the quality of legal and judicial system matters for improving the likelihood of firms' use of market-based funding.

#### ***4.3 MSI Index results***

For each firm in each year, the SAFE score is obtained by multiplying the estimated coefficients with the corresponding values of the independent variables plus the constant<sup>21</sup>. The index also loads the sectorial dummies and the country dummies to consider in an explicit way country and sector heterogeneity.

The SAFE scores for all firms in the Amadeus database from 2000 to 2014 are reported in Figure 4 (Chart a). We observe a sharp drop in the SAFE score in 2008 (in conjunction with the subprime financial crisis), while the decline in 2011 is less pronounced. After applying the thresholds as explained in the previous section, we obtain the MSI indicator (see Figure 4, Chart b), whose key results are presented below.

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<sup>20</sup> These tests have been performed on the model specification with country-specific variables and without sample weights (column 4 of Table 6). The percentage of cases correctly classified has been as high as 93.83%; the predictive power measured through the area under the ROC curve has reached a value of 0.6742, indicating that the model does have good predictive power. Goodness of fit has been conducted using the Pearson's chi-squared and the Hosmer-Lemeshow tests. Both tests have confirmed that the model can fit the data reasonably well with a  $\text{Prob} > \chi^2 = 0.3139$  and a  $\text{Prob} > \chi^2 = 0.6082$ , respectively.

<sup>21</sup> To compute the predicted SAFE score, we first consider the coefficients of the estimated probit that come out from the specification in column 2 of Table 6, as this regression considers also the country fixed effects.

Figure 5 displays the index mean value for SMEs and large firms across time. The number of SMEs that are suitable for accessing market-based finance remains quite limited, even though we witness a promising increase in the last two years. We also notice similar time dynamics by firm size with a large drop in 2008-2009 and in 2011-2012 in the aftermath of the two severe financial crises (subprime mortgage collapse and Eurozone sovereign debt crisis, respectively). These trends show that the index is very sensitive to economy-wide factors and financial market conditions. In the case of SMEs, we observe that the scale of fluctuations across time is larger, to the extent that SME capital market access suitability is much more sensitive to economy-wide conditions. This piece of evidence must be carefully considered by any policy measure meant to facilitate SME access to diversifying funding options.

Figure 6 presents the mean values of the MS index considering the size of firms according to number of employees. We define micro, small, medium and large firms on the basis of the number of employees (lower than 10, between 10 and 49, between 50 and 249 and greater than 250 employees, respectively). The evidence shows that if we do not consider micro firms that are in most cases not eligible for capital market funding, the fraction of small firms suitable for the capital market is no longer negligible (with a country average of 6.5%; see Table 7, Panel A), whereas the value appears even more significant for medium-sized firms (with 22.4% on average). The latter evidence is relevant as the medium-sized firm class is clearly the more equipped within the SME universe to enter capital markets

Nevertheless, our MS index displays large differences across countries. In the medium-size class, France tops the ranking in terms of firms suitable for market-based finance followed by Finland; Southern Europe countries are no longer at the bottom of the rankings, whereas Germany and Belgium are now positioned at the other end of the spectrum. Looking at the small size class, we still have heterogeneity, but the differences are smaller: Apart from Finland and France, other countries have more similar index values. Overall, high country heterogeneity within firm size is therefore confirmed.

As Germany and Belgium were at the top of the ranking in the SAFE replies by SME class size (see Table 3, Panel B), their lower MSI values could now indicate that SMEs in those countries have been largely capable of entering capital market financing

to such an extent that the MSI index signals a relatively low level of “residual” market suitable firms. A similar logic can be applied to firms located in the periphery Eurozone countries, where firms’ suitability to access to market-based finance is much higher than what emerge from actual SAFE replies.

Focusing on the common period 2009-2014 from the onset of the survey, Table 8 (Panel A) summarizes such evidence - i.e., the gap between suitability and effective access to market-based finance - measuring the differences between the MSI index and SAFE replies by size class<sup>22</sup>.

Figure 7 shows the index mean value by sector. The greater value of firms suitable for using market-based instruments is concentrated in the IT and Communications and Utilities sectors. The lower number of firms is in the Retail sector. Here, we have a positive correlation with average size of firms in each sector: For example, retail trade firms have an average size of 18 employees, whereas IT and Communications and Utilities have an average of 56 and 117, respectively.

Following the procedures used previously, we replicate the SAFE score and MSI index computations for the probit model that includes country-specific variables. Figures 8 to 10 present the distribution of the index over time, by firm size and firm sector. After controlling for specific country variables, the MSI does not change dramatically when focusing on firm size and firm sector; while, across time, it becomes strongly dependent on the business environment. For instance, the drop in the index experienced in 2008 is heightened when including country-specific variables. Such a result is clearly supported by figures displayed in Table 8 (Panel B).

Finally, Figure 11 summarizes the comparison between three versions of our MSI index: with only firm-specific variables and without country fixed effects, with firm-specific variables and country fixed effects, and including country-specific variables (see model specifications in column 1, 2 and 3 of Table 6). Again, with the marked exception of Germany and in part Belgium<sup>23</sup>, we witness a generalised decline in market suitability, in particular for medium-sized firms. In the abstract, as if it were an experiment in a laboratory, the percentage of our sample firms suitable for market-based

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<sup>22</sup> In Table 8, Panel A, the MSI Index is computed employing the model specification of column 1 in Table 6 with only firm-specific variables and without country fixed effects.

<sup>23</sup> Germany and Belgium are the two countries showing a better business cycle in our sample period, with an average GDP growth of 1.6% and 1%, respectively.

finance is substantial, and all the countries under investigation, with the exception of Germany, have not yet deployed their potential. When we consider the real context in which these firms operate, adding both the institutional characteristics of the business environment (the efficiency of the law, the functioning of the financial system) and the economic cycle, such potential is somehow reduced. In a few countries, the reduction is negligible; in others, it is a relevant one. In other words, the suitability of firms to market-based finance is not only sensitive to the business cycle and the conditions of the financial markets (as expected) but also to the efficiency of the legal system and the depth of the financial markets (both stock markets and banking markets).

#### ***5.4 Further tests on MSI Index***

In the last part of our analysis, we look at our MSI indicator in an attempt to test whether additional information can arise from a comparison of the two samples of firms grouped according to their being “market suitable” firms (with an MSI value of one) or “non-suitable” firms (with a zero MSI value). We implement a two-sample t-test for differences in the sample means for a set of firm financial indicators widely used as determinants of external financing, including investment ratios, cash holding<sup>24</sup> and cash flow over total assets<sup>25</sup>. The idea is to test more comprehensively whether our MSI index is able to discriminate between firms with different structural or financial characteristics (not included in the previous analysis)<sup>26</sup>.

Table 9 shows that “‘market suitable’ SME firms” are not only firms with higher investment ratios and lower excess liquidity but also those with relative differences that are statistically significant. Moreover, the cash holding and the cash flow over total asset results (not reported in our tables) further support the interpretation of the current ratio in our probit estimation as a proxy of the creditworthiness/soundness of firms due to less dependence on short-term financial debt rather than excess liquidity.

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<sup>24</sup> Investment ratios are measured as the change in the stock of fixed capital plus depreciation over total assets and cash holding as cash and cash equivalents over total assets.

<sup>25</sup> T-test for cash flow over total asset results are not reported in Table 9, but the differences in the means have been statistically significant too. Higher cash flow over total assets is concentrated in the non-suitable firm group.

<sup>26</sup> In our t-tests, we have employed the MSI index version that considers only firm-specific variables.

## 6. Conclusions

The key contribution of this paper to the existing literature on SMEs' financing choices is twofold: 1) assembling a novel database on Eurozone SMEs based on firms' statements regarding external capital market funding through survey replies; 2) the creation of a novel survey-based index that aims to uncover the potential suitability of firms to access market-based finance.

The first aspect is achieved by using a dataset that matches firms that participate in the ECB Survey on Access to Finance of Enterprises (SAFE) with their financial statements sourced by the BvD Amadeus database. Comprehensive databases on actual market-based issuances of professional financial data providers (such as Reuter's Thomson One, Dealogic) have many limitations: first, they cover mainly market-based financing of listed firms, with a low coverage of unlisted SME financing; second, in many cases, particularly for SMEs, they do not permit matching between the issuer and its financial statements data. Achieving this matching allowed us to implement the SMEs' decisions for raising new equity or issuing bonds as the dependent variable in our empirical analysis, contrary to the existing literature, which mainly focuses on leverage and other financial statement items. Our results uncover a number of firm-specific and country-specific factors capable of influencing the likelihood of Eurozone SME access to market-based finance.

The novel survey-based index, on the other hand, provides useful insights on the "market suitability" of prospective issuers across size (micro, small, medium and large firms), country and sector. Through our empirical analysis, we detected firm-specific factors that are able to influence their likely use of market-based instruments. We observe a positive relation of size, listed status of the company, growth opportunity and leverage with the use of equity and debt issuances; moreover, a higher probability of accessing market-based finance for firms that are able to combine lower profitability with a proper level of safety/solvency (via a higher current ratio due to less short-term financial debt). Regarding the country-specific variables, the development of domestic equity markets, economic (GDP) growth, the relative volume of domestic credit supplied to the private sector and the quality of the legal and judicial system play a role in improving the likelihood of firms' use of market-based funding.

Our survey-based index (MSI) spots how many SMEs are suitable for accessing market-based finance. The Index enables us to identify firms at the dimensional, sectoral and national level that are more suitable for capital market financing.

Through the SAFE replies, it is possible to document the capital market involvement of Eurozone firms and we highlight that Southern European countries (Italy, Spain and Portugal) present a lower use of market-based instruments both at the overall sample and SME subsample level. Major discrepancies across countries are reported at equity funding, notably for SMEs. This evidence records a low capacity of SMEs located in the Eurozone periphery to diversify their funding options in times of economic downturns or financial crisis, during which bank lending decisions become more selective due to banks' own financial constraints and the rising default probabilities of SMEs.

The findings of our MSI are in line with this evidence. Countries like Germany, France and Finland have more firms that are able to use market-based instruments, whereas distressed countries in the Eurozone periphery such as Italy, Spain and Portugal have a lower percentage of market-suitable firms. However, if we do not consider micro firms, which are less likely to tap capital markets, our results change dramatically and interestingly. Limiting our analysis to the medium-size range, i.e., in the class of firms with employees in the 50-249 range or with sales between €10-€50 million, Southern European SMEs suitable for accessing market finance now become relatively better positioned in comparison to other EU countries in our sample. Significant differences appear also among sectors: IT and communications along with utilities firms are more suitable for market financing, but we must take in account that these are the sectors in which firms have a higher average size.

Moreover, our index is sensitive to institutional factors and economy-wide conditions, and this seems particularly more acute in the case of SMEs. Our MSI indicator including country-specific variables highlights that business conditions - measured through GDP growth, the degree of development of domestic stock and the credit market - and the quality of the legal and judicial enforcement system influence a firm's market suitability, reducing for the majority of countries the likely SME access to market-based finance. This evidence must be carefully considered by any policy measure directed at facilitating SME capital markets access.

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## Tables and Figures

Table 1 Explanatory variables and Hypotheses

| Explanatory variables                   | Short description   | Expected effect  | Rationale  |
|---|---|--|--|
| <i>Panel A. Firm-specific variables</i> |   |  |  |
| Size                                    | Logarithm of sales  | Firm size has a positive effect on market-based finance  | Life cycle theory and Asymmetric information theory  |
| Age                                     | Number of years   | Age has a positive effect on market-based debt<br>Age has a negative effect on market-based finance  | Life cycle theory<br>Pecking order theory            |
| Listed status/<br>Informational opacity | Dummy variable equal to 1 for listed firm and zero otherwise  | Listed status has a positive effect on market-based finance  | Life cycle theory and Pecking order theory           |
| Tangibility                             | Fixed Assets/Total Assets   | Tangibility has a positive effect on debt market-based finance<br>Tangibility has an unclear effect on equity-based finance.                             | Mitigation of lender's risk                          |
| Fixed assets to equity ratio            | Fixed assets/equity   | Fixed assets to equity has a positive effect on market-based finance   | Fixing imbalances at balance sheet level             |
| Profitability                           | EBITDA / Total Assets   | Profitability has a negative effect on market-based finance<br>Profitability has a positive effect on market-based finance                               | Pecking order theory<br>Static trade-off theory      |
| Current ratio/<br>Liquidity             | Current assets/ current liabilities   | Liquidity has a negative effect on market-based finance<br>Liquidity has a positive effect on market-based finance                                       | Pecking order theory<br>Lack of reputational capital |
| Turnover growth                         | Difference between the average value of turnover in periods t+1 and t+2 and the value of variable turnover in period t, scaled by the value of turnover in period t.                | Growth has a positive effect on equity-based finance but a negative effect on market-based debt<br><br>Growth has a positive effect on market-based debt | Agency theory<br><br>Pecking order theory            |
| Fixed asset growth (lagged)             | Difference between the value of fixed assets in period t and the average value of variable fixed assets in periods t-1 and t-2, scaled by the average value in periods t-1 and t-2. | Growth has a positive effect on equity-based finance but a negative effect on market-based debt<br><br>Growth has a positive effect on market-based debt | Agency theory<br><br>Pecking order theory            |
| Leverage                                | Financial debt/total assets   | Leverage has a positive effect on equity-based finance   | Static trade-off theory                              |
| Financial pressure                      | Interest paid /EBITDA   | Financial pressure has a positive effect on equity-based finance   | Static trade-off theory                              |
| Tax                                     | Taxation/Profit before  | Taxation has a negative effect on equity-based   | Static trade-off theory                              |

|  |   |  |   |
|--|---|--|---|
|  | tax   | finance<br>Taxation has a positive effect on market-based debt   | Static trade-off theory   |
| <b>Panel B. Country-specific variables</b> |   |  |   |
| Economic growth                            | GDP annual growth rate<br><i>Source: World Bank.</i>  | Economic growth has a positive effect on market-based finance  | Higher amount of firm investments that need to be funded through external sources.  |
| Stock market development                   | Equity market capitalization over GDP<br><i>Source: World Bank.</i>   | Stock market development has a positive effect on market-based finance   | Capital market width, depth and liquidity facilitate firms' access  |
| Bond market development                    | Bond issued by NFC over GDP<br><i>Source: World Bank.</i>   | Bond market development has a positive effect on debt market-based finance.  | Capital market width, depth and liquidity facilitate firms' access  |
| Banking system development                 | Domestic credit to private sector over GDP<br><i>Source: World Bank.</i>  | High dependence on bank credit has a negative effect on market-based finance<br><br>High dependence on bank credit has a positive effect on market-based finance | Crowding out effects on equity and bond issues<br><br>Excessive dependence on bank credit can promote diversification of firms' external funding options  |
| Rule of law                                | Confidence in the rules of society score.<br><i>Source: World Bank WGI Indicator.</i>   | Higher score is expected to promote easier firm access to capital markets (a positive relation).   | Confidence in the rules of society and the likelihood of "white-collar crime and corruption may impact on firms' access to external finance   |
| Property rights                            | Degree to which a country's laws protect private property rights and its government enforces those laws. <i>Source: "Index of Economic Freedom" by the Heritage Foundation.</i> | Higher score is expected to have a positive relation to firm access to capital markets   | Level of protection of property rights is quite sensitive for prospective capital markets investors. See, for example, the degree of protection guaranteed to minority shareholders in equity markets.    |
| Time needed to dispute resolution          | Average time needed to resolve a dispute in calendar day. <i>Source: "Doing Business" by World Bank.</i>  | Longer time is expected to have a positive relation to firm access to market-based finance   | The longer the time to resolve a dispute, the higher the probability that firms are denied credit from banks. Diversifying external funding through capital markets can help mitigate credit constraints. |
| Number of procedural steps                 | Number of procedural steps involved in a commercial dispute." <i>Source: "Doing Business" by World Bank.</i>  | Number of procedural steps should have a negative effect on access to external market-based finance.   | Higher number of procedural steps involved in the judicial enforcement system should be linked with reduced access to external capital markets funding.   |

Source: Firm-specific variables are all computed after collecting the raw data from Bureau van Dijk Amadeus database on firms' financial statements. Country-specific variables are sourced from World Bank (Economic growth, Stock market development, Bond market development, and Banking system development variables), World Bank WGI Indicator (Rule of law variable), Heritage Foundation's Index of Economic Freedom (Property rights), and World Bank's "Doing Business"(Time needed to dispute resolution and Number of procedural steps) databases.

*Table 2 Number of SAFE sample firms by country and size (waves 2 to 13 - 2009-2015)*

| Country  | All firms |        | Micro  |        | Small  |        | Medium |        | Large  |        |
|----------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|          | number    | %      | number | %      | number | %      | number | %      | number | %      |
| Belgium  | 4,572     | 9.2%   | 1,756  | 12.1%  | 1,678  | 10.2%  | 907    | 6.3%   | 231    | 5.0%   |
| Germany  | 8,593     | 17.2%  | 1,667  | 11.4%  | 2,821  | 17.2%  | 2,992  | 20.8%  | 1,113  | 24.0%  |
| France   | 10,589    | 21.2%  | 3,189  | 21.9%  | 3,248  | 19.8%  | 3,048  | 21.2%  | 1,104  | 23.8%  |
| Finland  | 4,010     | 8.0%   | 1,320  | 9.1%   | 1,578  | 9.6%   | 902    | 6.3%   | 210    | 4.5%   |
| Italy    | 7,753     | 15.5%  | 1,994  | 13.7%  | 2,359  | 14.4%  | 2,603  | 18.1%  | 797    | 17.2%  |
| Spain    | 10,015    | 20.0%  | 3,137  | 21.5%  | 3,165  | 19.3%  | 2,824  | 19.7%  | 889    | 19.2%  |
| Portugal | 4,421     | 8.9%   | 1,509  | 10.4%  | 1,527  | 9.3%   | 1,092  | 7.6%   | 293    | 6.3%   |
| Total    | 49,953    | 100.0% | 14,572 | 100.0% | 16,376 | 100.0% | 14,368 | 100.0% | 4,637  | 100.0% |
|          | 100.0%    |        | 29.2%  |        | 32.8%  |        | 28.8%  |        | 9.3%   |        |

Source: matched database SAFE-Amadeus. Firms are only non-financial corporations. Micro firms are defined as firms with fewer than 10 employees, small firms are those with 10-49 employees, medium firms are those with 50-249 employees, and large firms have more than 250 employees. Period analysed: 2009-2015.

Table 3. Firms that have used market-based finance according to SAFE replies (weighted percentages)

Panel A. All firms

| <b>All Firms (%)</b> |                 |        |                      |
|----------------------|-----------------|--------|----------------------|
|                      | debt securities | equity | market-based finance |
| Belgium              | 5.1             | 4.6    | 8.8                  |
| Germany              | 2.3             | 7.4    | 8.4                  |
| Spain                | 2.7             | 3.3    | 5.2                  |
| Finland              | 6.5             | 8.9    | 12.9                 |
| France               | 1.9             | 6.7    | 7.9                  |
| Italy                | 1.7             | 4.7    | 6.1                  |
| Portugal             | 3.2             | 1.6    | 4.6                  |

Panel B. SMEs and large firms breakdown

| <b>SME (%)</b> |                 |        |                      | <b>Large firms (%)</b> |                 |        |                      |
|----------------|-----------------|--------|----------------------|------------------------|-----------------|--------|----------------------|
|                | debt securities | equity | market-based finance |                        | debt securities | equity | market-based finance |
| Belgium        | 0.8             | 5.7    | 6.4                  | Belgium                | 6.9             | 6.9    | 12.1                 |
| Germany        | 0.7             | 6.6    | 6.7                  | Germany                | 2.6             | 8.5    | 10.8                 |
| Spain          | 2.2             | 3.0    | 4.3                  | Spain                  | 3.4             | 3.8    | 6.5                  |
| Finland        | 1.1             | 4.8    | 5.8                  | Finland                | 13.3            | 10.6   | 20.3                 |
| France         | 1.3             | 4.8    | 5.8                  | France                 | 3.8             | 9.8    | 11.9                 |
| Italy          | 1.4             | 3.4    | 4.6                  | Italy                  | 2.3             | 7.9    | 9.9                  |
| Portugal       | 0.9             | 1.2    | 1.9                  | Portugal               | 7.4             | 3.4    | 10.7                 |

Source: matched database SAFE-Amadeus. Weighted average percentages of firms that have used market-based instruments (equity or debt securities) in the previous six months and 0 otherwise. Debt securities are short-term commercial paper or long-term corporate bonds issued, equity capital refers to raising capital through the sale of shares. For Germany percentages in wave 3 are calculated as averages of those in wave 2 and wave 4 as some changes in the questionnaire may have caused a break in the series on equity. SMEs defined as firms with fewer than 250 employees. Period analysed: 2009-2015.

*Table 4 Descriptive Statistics of explanatory variables*

*Panel A. Matched SAFE-Amadeus database (2009-2014)*

| Variable                          | Obs    | Mean   | Std. Dev. | Min   | Max    |
|-----------------------------------|--------|--------|-----------|-------|--------|
| Tangibility                       | 40,802 | 0.320  | 0.245     | 0.00  | 0.95   |
| Profitability                     | 36,359 | 0.084  | 0.128     | -0.43 | 0.48   |
| Turnover growth                   | 31,446 | 0.048  | 0.342     | -1.87 | 4.00   |
| Fixed asset growth                | 39,142 | 0.066  | 0.396     | -0.51 | 1.31   |
| Current ratio                     | 38,937 | 2.259  | 3.284     | 0.15  | 26.15  |
| Fixed assets to equity            | 37,601 | 1.852  | 3.807     | 0.00  | 27.77  |
| Listed                            | 49,590 | 0.032  | 0.176     | 0.00  | 1.00   |
| Financial pressure                | 31,924 | 0.348  | 0.442     | 0.00  | 2.69   |
| Size                              | 36,501 | 8.167  | 1.999     | 0.00  | 17.97  |
| Age                               | 49,547 | 24.052 | 18.654    | 1.00  | 105.00 |
| Leverage                          | 35,925 | 0.222  | 0.217     | 0.00  | 0.93   |
| Tax                               | 34,466 | 0.197  | 0.215     | -0.15 | 0.92   |
| Stock market development          | 42     | 0.544  | 0.218     | 0.15  | 0.87   |
| Bond market development           | 42     | 0.055  | 0.037     | 0.000 | 0.148  |
| Banking system development        | 42     | 1.067  | 0.336     | 0.54  | 1.72   |
| Rule of law                       | 42     | 1.242  | 0.460     | 0.34  | 2.12   |
| Time needed to dispute resolution | 42     | 564.51 | 279.45    | 235.0 | 1210.0 |
| Property rights                   | 42     | 74.591 | 12.875    | 50.0  | 95.0   |
| Number of procedural steps        | 42     | 33.226 | 4.829     | 26.0  | 41.0   |
| Economic growth                   | 42     | 0.435  | 1.847     | -7.49 | 5.01   |

*Panel B. Amadeus database (2000-2014)*

| Variable               | Obs        | Mean  | Std. Dev. | Min   | Max   |
|------------------------|------------|-------|-----------|-------|-------|
| Tangibility            | 11,190,690 | 0.32  | 0.28      | -1.44 | 3.00  |
| Profitability          | 10,945,429 | 0.11  | 0.15      | -0.5  | 0.64  |
| Turnover growth        | 11,191,380 | 0.06  | 0.44      | -1.0  | 5.00  |
| Fixed asset growth     | 10,948,713 | 0.04  | 0.49      | -1.0  | 5.00  |
| Current ratio          | 11,142,673 | 1.81  | 1.98      | 0.05  | 15.5  |
| Fixed assets to equity | 10,214,269 | 1.8   | 3.26      | 0.0   | 30.00 |
| Listed                 | 11,191,380 | 0.0   | 0.04      | 0.0   | 1     |
| Financial pressure     | 9,322,379  | 0.34  | 0.43      | 0.0   | 2.99  |
| Size                   | 11,189,678 | 6.43  | 1.75      | 0.0   | 19.02 |
| Age                    | 11,161,345 | 14.16 | 12.74     | 0.0   | 435   |
| Leverage               | 10,912,585 | 0.16  | 0.21      | 0.0   | 0.99  |
| Tax                    | 10,336,077 | 0.21  | 0.27      | -1.0  | 1.0   |

Source: All firms (Large and SMEs) in our Eurozone country sample. See Table 1 for a description of the independent variables. Panel A: Descriptive statistics of independent variables for firms in the matched database SAFE-Amadeus Period analysed:2009-2014. Panel B Descriptive statistics of independent variables for firms in the enlarged Amadeus sample. Period analysed:2000-2014.

Table 5 Correlation matrix of independent variables

Panel A. Firm-specific variables

|                        | Tangibility | Profitability | Turnover growth | Fixed asset growth | Current ratio | Fixed assets to equity | Listed | Financial pressure | Size  | Age  | Leverage | Tax |
|------------------------|-------------|---------------|-----------------|--------------------|---------------|------------------------|--------|--------------------|-------|------|----------|-----|
| Tangibility            | 1           |               |                 |                    |               |                        |        |                    |       |      |          |     |
| Profitability          | 0.03        | 1             |                 |                    |               |                        |        |                    |       |      |          |     |
| Turnover growth        | 0.01        | -0.01         | 1               |                    |               |                        |        |                    |       |      |          |     |
| Fixed asset growth     | 0.10        | 0.05          | 0.08            | 1                  |               |                        |        |                    |       |      |          |     |
| Current ratio          | -0.16       | 0.05          | -0.01           | -0.02              | 1             |                        |        |                    |       |      |          |     |
| Fixed assets to equity | 0.28        | 0.00          | 0.00            | 0.06               | -0.09         | 1                      |        |                    |       |      |          |     |
| Listed                 | 0.02        | 0.00          | -0.01           | 0.00               | -0.01         | 0.00                   | 1      |                    |       |      |          |     |
| Financial pressure     | 0.05        | -0.54         | -0.01           | -0.03              | -0.07         | 0.08                   | -0.01  | 1                  |       |      |          |     |
| Size                   | -0.01       | 0.09          | -0.04           | 0.04               | -0.09         | -0.01                  | 0.18   | -0.12              | 1     |      |          |     |
| Age                    | 0.01        | -0.03         | -0.05           | -0.05              | 0.06          | -0.05                  | 0.05   | -0.03              | 0.37  | 1    |          |     |
| Leverage               | 0.35        | -0.12         | -0.01           | 0.03               | -0.03         | 0.22                   | -0.04  | 0.28               | -0.10 | 0.07 | 1        |     |
| Tax                    | 0.03        | 0.30          | -0.01           | 0.06               | 0.01          | -0.02                  | -0.01  | -0.37              | 0.12  | 0.01 | -0.08    | 1   |

Panel B. Country-specific variables

|                                   | Stock market dev. | Banking system dev. | Bond market dev. | Rule of law | Time needed to dispute resolution | Property rights | Number of procedural steps | Economic growth |
|-----------------------------------|-------------------|---------------------|------------------|-------------|-----------------------------------|-----------------|----------------------------|-----------------|
| Stock market dev.                 | 1                 |                     |                  |             |                                   |                 |                            |                 |
| Banking system dev.               | 0.26              | 1                   |                  |             |                                   |                 |                            |                 |
| Bond market dev.                  | 0.08              | -0.34               | 1                |             |                                   |                 |                            |                 |
| Rule of law                       | 0.41              | -0.23               | 0.60             | 1           |                                   |                 |                            |                 |
| Time needed to dispute resolution | -0.61             | -0.06               | -0.54            | -0.90       | 1                                 |                 |                            |                 |
| Property rights                   | 0.31              | -0.26               | 0.69             | 0.96        | -0.87                             | 1               |                            |                 |
| Number of procedural steps        | 0.00              | 0.74                | -0.46            | -0.59       | 0.47                              | -0.60           | 1                          |                 |
| Economic growth                   | 0.10              | -0.32               | 0.49             | 0.24        | -0.24                             | 0.29            | -0.31                      | 1               |

Source: matched database SAFE-Amadeus. All firms (Large and SMEs) in our Eurozone country samples. See Table 1 for a description of the independent variables. Period analysed: 2009-2015.

Table 6 Probit Estimation with firm-specific and country-specific variables

Panel A. Regression coefficients

| VARIABLES                         | (1)       | (2)       | (3)        | (4)        |
|-----------------------------------|-----------|-----------|------------|------------|
| Profitability                     | -0.853*** | -0.978*** | -1.021***  | -0.586***  |
| Turnover growth                   | 0.213***  | 0.171***  | 0.179***   | 0.113***   |
| Current ratio                     | 0.0267*** | 0.0190**  | 0.0196**   | 0.00930    |
| Listed                            | 0.204**   | 0.202**   | 0.195**    | 0.222***   |
| Size                              | 0.109***  | 0.0911*** | 0.0914***  | 0.0764***  |
| Leverage                          | 0.328***  | 0.402***  | 0.387***   | 0.280***   |
| Fixed asset growth                |           |           |            | 0.0899***  |
| Stock market dev.                 |           |           | 0.616***   | 0.804***   |
| Banking system dev.               |           |           | 1.071***   | 0.667***   |
| Rule of law                       |           |           | 0.933***   | 0.429**    |
| Time needed to dispute resolution |           |           | 0.299***   | 0.234***   |
| Property rights                   |           |           | 0.0196***  | 0.0219***  |
| Number of procedural steps        |           |           | -0.0743*** | -0.0488*** |
| Economic growth                   |           |           | 0.0600*    | 0.0908***  |
| Constant                          | -3.045*** | -2.908*** | -5.876***  | -5.407***  |
| Observations                      | 25,306    | 25,306    | 24,605     | 23,999     |
| Errors                            | robust    | robust    | robust     | robust     |
| Country FE                        | NO        | YES       | NO         | NO         |
| Wave FE                           | YES       | YES       | YES        | YES        |
| Sector FE                         | YES       | YES       | YES        | YES        |
| Sample weights                    | YES       | YES       | YES        | NO         |
| Pseudo R-squared                  | 0.0693    | 0.0796    | 0.0815     | 0.0529     |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Panel B. Marginal effects*

| VARIABLES                         | (1)        | (2)       | (3)        | (4)         |
|-----------------------------------|------------|-----------|------------|-------------|
| Profitability                     | -0.116***  | -0.132*** | -0.139***  | -0.0675***  |
| Turnover growth                   | 0.0289***  | 0.0229*** | 0.0244***  | 0.0130***   |
| Current ratio                     | 0.00363*** | 0.00256** | 0.00267**  | 0.00107     |
| Listed                            | 0.0277**   | 0.0272**  | 0.0266**   | 0.0255***   |
| Size                              | 0.0148***  | 0.0122*** | 0.0124***  | 0.00881***  |
| Leverage                          | 0.0445***  | 0.0541*** | 0.0528***  | 0.0322***   |
| Fixed asset growth                |            |           |            | 0.0104***   |
| Stock market dev.                 |            |           | 0.0839***  | 0.0927***   |
| Banking system dev.               |            |           | 0.146***   | 0.0769***   |
| Rule of law                       |            |           | 0.127***   | 0.0495**    |
| Time needed to dispute resolution |            |           | 0.0407***  | 0.0269***   |
| Property rights                   |            |           | 0.00267*** | 0.00253***  |
| Number of procedural steps        |            |           | -0.0101*** | -0.00562*** |
| Economic growth                   |            |           | 0.00817*   | 0.0105***   |
| Observations                      | 25,306     | 25,306    | 24,605     | 23,999      |
| Errors                            | robust     | robust    | robust     | robust      |
| Country FE                        | NO         | YES       | NO         | NO          |
| Wave FE                           | YES        | YES       | YES        | YES         |
| Sector FE                         | YES        | YES       | YES        | YES         |
| Sample weights                    | YES        | YES       | YES        | NO          |

\*\*\* p<0.01, \*\* p<0.05, p<0.1

Source: matched database SAFE-Amadeus. All firms (Large and SMEs). Dependent variable is a dichotomous variable that takes value 1 if firms report (on SAFE questionnaire) to have used marked-based instruments (new equity or debt securities) in the previous six months and 0 otherwise. Column 1 refers to model specification with only firm-specific variables without country dummies and sector fixed effects (1), column 2 with firm-specific variables and country dummies (2), column 3 including country-specific variables with sample weights (3) and column 4 including country-specific variables without sample weights (4). Independent variables are defined in Table 1. Period analysed: 2009-2014. Panel A summarizes regression coefficients while Panel B describes marginal effects.

Table 7. MSI mean value with only firm-specific variables by firm size

Panel A. Size based on number of employees

| <b>Firm size (%)</b> |                      |                       |                       |                        |
|----------------------|----------------------|-----------------------|-----------------------|------------------------|
|                      | Size<10<br>employees | Size< 50<br>employees | Size<250<br>employees | Size> 250<br>employees |
| Belgium              | 4.6                  | 3.7                   | 7.4                   | 31.1                   |
| Germany              | 4.0                  | 3.2                   | 6.4                   | 24.6                   |
| Spain                | 2.5                  | 3.4                   | 17.6                  | 56.4                   |
| Finland              | 5.7                  | 14.6                  | 40.9                  | 80.4                   |
| France               | 4.6                  | 10.9                  | 42.7                  | 85.0                   |
| Italy                | 2.4                  | 5.7                   | 24.7                  | 68.2                   |
| Portugal             | 2.2                  | 3.9                   | 17.3                  | 54.8                   |
| <i>Average</i>       | <i>3.7</i>           | <i>6.5</i>            | <i>22.4</i>           | <i>57.2</i>            |

Panel B. Size based on EC classification

| <b>Firm size (%)</b> |            |            |             |             |
|----------------------|------------|------------|-------------|-------------|
|                      | Micro      | Small      | Medium      | Large       |
| Belgium              | 2.2        | 2.5        | 5.9         | 32.1        |
| Germany              | 1.1        | 2.1        | 4.8         | 23.3        |
| Spain                | 2.4        | 3.4        | 17.4        | 58.5        |
| Finland              | 5.3        | 14.9       | 41.9        | 82.1        |
| France               | 4.1        | 11.2       | 45.0        | 87.2        |
| Italy                | 2.0        | 4.0        | 22.8        | 68.8        |
| Portugal             | 2.1        | 4.4        | 19.3        | 59.4        |
| <i>Average</i>       | <i>2.8</i> | <i>6.1</i> | <i>22.4</i> | <i>58.8</i> |

Source: matched database SAFE-Amadeus. Panel A and B display results of MSI index computed with only firm-specific variables across years 2000-2014. MSI index selects those firms that are market suitable by introducing a threshold on the SAFE score. We pick the top x% of the distribution of the SAFE score by country, where x is the percentage of firms which declared in the SAFE survey to use market-based instruments over 2009-2015. For each year firms suitable for market-based financing are identified as those with a value of the SAFE score greater than the threshold. The MS indicator (MSI) will be equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. SMEs are defined on number of employees (Panel A) and on EC definition (Panel B). According to EC definition: Micro are firms with less than 10 employees and with sales and total assets under €2 million. Small firms are those with 10 and 49 employees or with sales and total assets under €10 million. Medium-sized firms are those with 50 and 249 employees or with sales between €10 and €50 million and total assets between €10 and €43 million. Large firms are those with more than 250 employees or with sales more than €50 million and total assets more than €43 million. Averages are simple (non-weighted) means of country values.

*Table 8 The difference between MSI value and SAFE replies by firm size and country*

*Panel A. MSI index with only firm-specific variables (without country fixed effects)*

|                | <b>Firm size (%)</b> |            |             |             |
|----------------|----------------------|------------|-------------|-------------|
|                | Micro                | Small      | Medium      | Large       |
| Belgium        | -0.6                 | -2.1       | 1.2         | 26.9        |
| Germany        | -2.7                 | -3.1       | -4.3        | 16.6        |
| Spain          | -0.7                 | -0.7       | 24.2        | 69.1        |
| Finland        | -1.1                 | 13.1       | 49.8        | 72.7        |
| France         | -1.0                 | 8.8        | 57.1        | 83.7        |
| Italy          | -1.5                 | 0.3        | 26.0        | 73.2        |
| Portugal       | 0.7                  | 2.3        | 20.0        | 61.4        |
| <i>Average</i> | <i>-1.0</i>          | <i>2.6</i> | <i>24.9</i> | <i>57.7</i> |

*Panel B. MSI index including country-specific variables*

|                | <b>Firm size (%)</b> |            |             |             |
|----------------|----------------------|------------|-------------|-------------|
|                | Micro                | Small      | Medium      | Large       |
| Belgium        | 0.7                  | -1.0       | 1.9         | 16.0        |
| Germany        | -1.4                 | -2.3       | -3.2        | 13.7        |
| Spain          | 0.0                  | -0.6       | 15.0        | 39.9        |
| Finland        | 0.8                  | 13.1       | 36.8        | 53.8        |
| France         | -1.3                 | 5.9        | 37.2        | 70.4        |
| Italy          | -0.7                 | 1.4        | 18.5        | 53.6        |
| Portugal       | 1.2                  | 2.1        | 14.4        | 41.3        |
| <i>Average</i> | <i>-0.1</i>          | <i>2.7</i> | <i>17.2</i> | <i>41.2</i> |

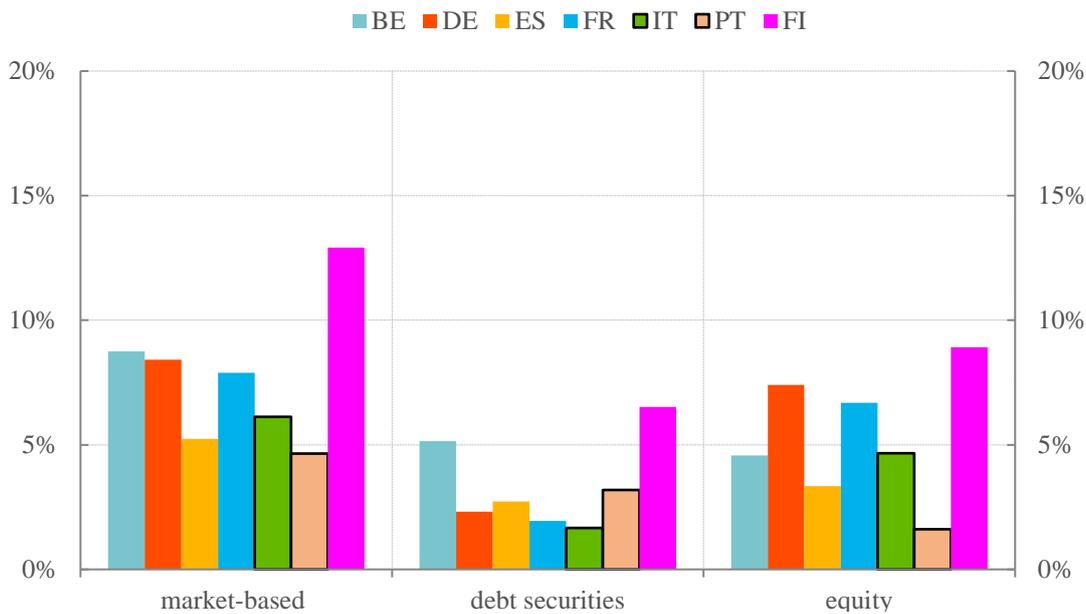
Source: matched database SAFE-Amadeus. The MSI index selects those firms that are market suitable by introducing a threshold on the SAFE score derived from the SAFE (see note on Table 7). Panel A displays results when using MSI index computed with only firm-specific variables without country dummies according to the model specification of column 1 in Table 6, while Panel B exhibits the differences employing the MSI index including also country-specific variables (column 3 of Table 6). For Germany percentages in wave 3 are calculated as averages of those in wave 2 and wave 4 as some changes in the questionnaire may have caused a break in the series on equity. SMEs are defined on number of employees. Averages are simple (non-weighted) means of country values. Period analysed: 2009-2014.

*Table 9 Firms “suitable” to access market-based finance and investment ratio/cash holdings (two samples t-test)*

|        | MSI (%) | MSI | Obs       | Investment ratios | t-test on means | Cash holding | t-test on means |
|--------|---------|-----|-----------|-------------------|-----------------|--------------|-----------------|
| all    | 5.8     | 0   | 9,788,604 | 30.3              | significant     | 17.2         | significant     |
|        |         | 1   | 607,385   | 32.8              |                 | 11.0         |                 |
| micro  | 3.5     | 0   | 5,439,335 | 29.4              | significant     | 19.6         | significant     |
|        |         | 1   | 196,407   | 29.7              |                 | 15.1         |                 |
| small  | 6.4     | 0   | 1,844,353 | 33.7              | significant     | 13.0         | significant     |
|        |         | 1   | 125,789   | 35.8              |                 | 9.4          |                 |
| medium | 25.6    | 0   | 336,911   | 35.7              | not sign.       | 9.8          | significant     |
|        |         | 1   | 115,835   | 35.8              |                 | 7.1          |                 |
| large  | 58.9    | 0   | 48,867    | 35.5              | not sign.       | 9.6          | significant     |
|        |         | 1   | 69,909    | 35.8              |                 | 6.8          |                 |

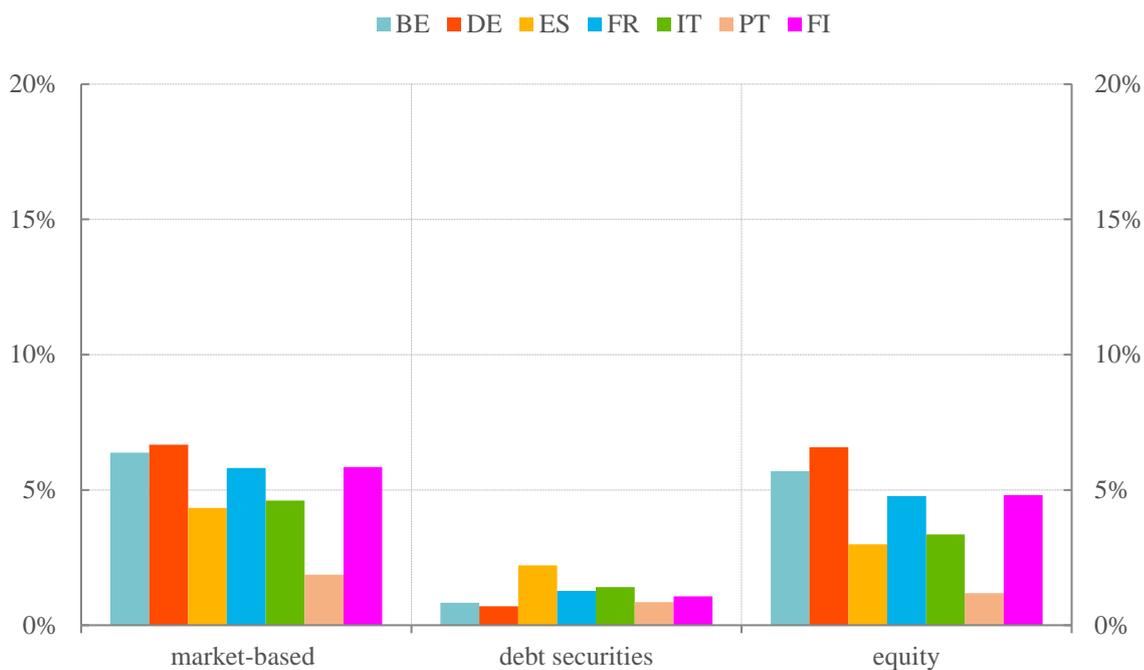
Source: matched database SAFE-Amadeus. Two samples t-test for differences in the samples means for firms' investment ratios and cash holding. Investment ratios are measured as change in the stock of fixed capital over total assets and cash holding as cash and cash equivalents over total assets. The two samples are based on the value of MS indicator (MSI) at firm level. MSI index used is the specification with firm-specific variables of column 2 in Table 6. For “market suitable” firms is equal to 1, zero otherwise. Firm size is defined on number of employees. Period analysed: 2000-2014.

Figure 1. Firms in the SAFE sample that have used market-based finance (*weighted percentages*)



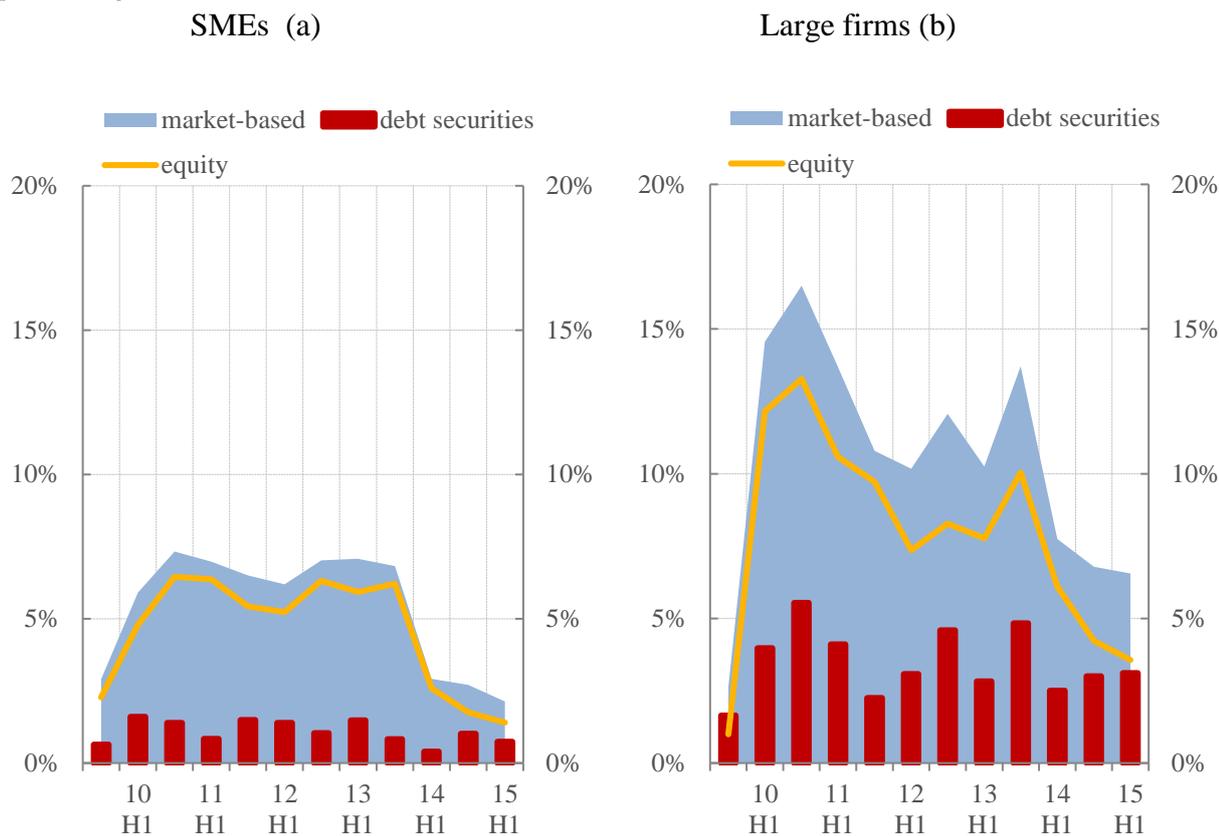
Source: matched database SAFE-Amadeus. All firms (Large and SMEs). Weighted percentages of firms that have used market-based instruments (equity or debt securities) in the previous six months and 0 otherwise. Debt securities are short-term commercial paper or long-term corporate bonds issued, equity capital refers to raising capital through the sale of shares. For Germany percentages in wave 3 are calculated as averages of those in wave 2 and wave 4 as some changes in the questionnaire may have caused a break in the series on equity. SMEs defined as firms with fewer than 250 employees. Period analysed: 2009-2015.

Figure 2. SMEs that have used market-based finance (*weighted percentages*)



Source: matched database SAFE-Amadeus. SMEs are defined as firms with fewer than 250 employees. Weighted percentages of firms that have used market-based instruments (equity or debt securities) in the previous six months and 0 otherwise. Debt securities are short-term commercial paper or long-term corporate bonds issued, equity capital refers to raising capital through the sale of shares. For Germany percentages in wave 3 are calculated as averages of those in wave 2 and wave 4 as some changes in the questionnaire may have caused a break in the series on equity. SMEs defined as firms with less than 250 employees. Period analysed: 2009-2015.

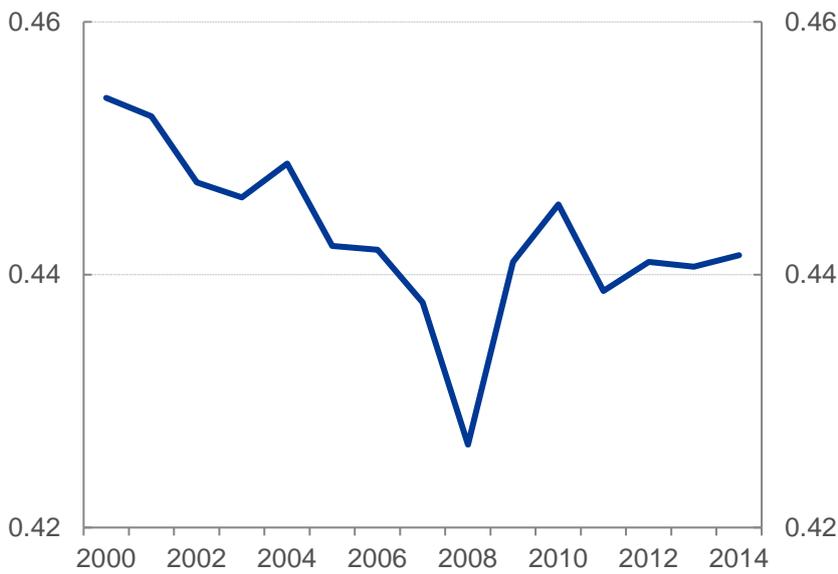
Figure 3 SMEs and Large firms that have used market-based finance across time (*weighted percentages*)



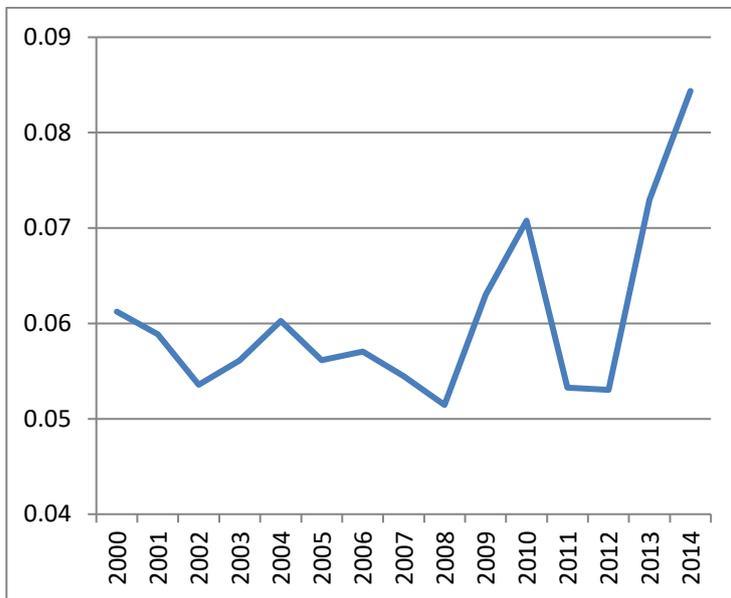
Source: matched database SAFE-Amadeus. Weighted percentages of firms that have used market-based instruments (equity or debt securities) in the previous six months and 0 otherwise. Debt securities are short-term commercial paper or long-term corporate bonds issued, equity capital refers to raising capital through the sale of shares. For Germany percentages in wave 3 are calculated as averages of those in wave 2 and wave 4 as some changes in the questionnaire may have caused a break in the series on equity. SMEs defined as firms with fewer than 250 employees. Period analysed: 2009-2015.

Figure 4 SAFE score and MSI Index based on Amadeus database across time

a) SAFE score

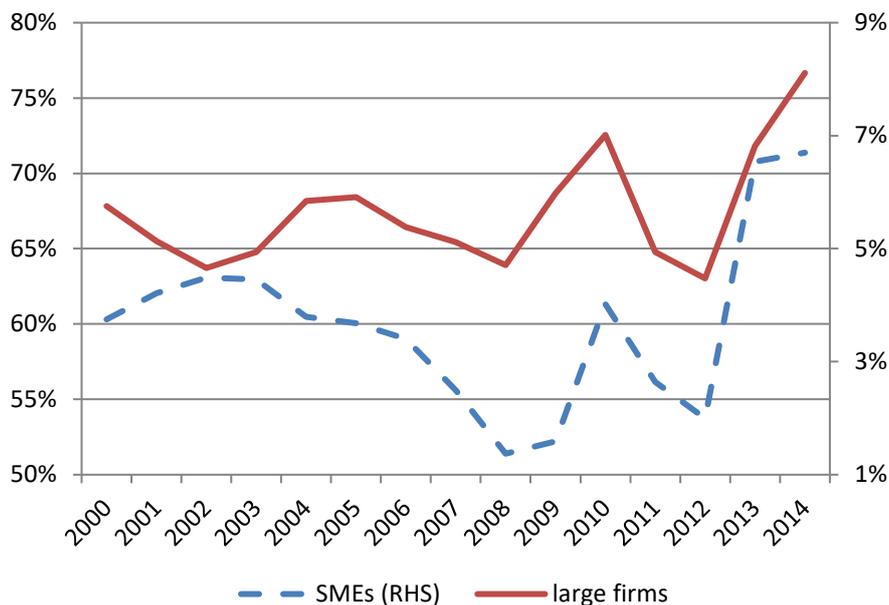


b) MSI Index



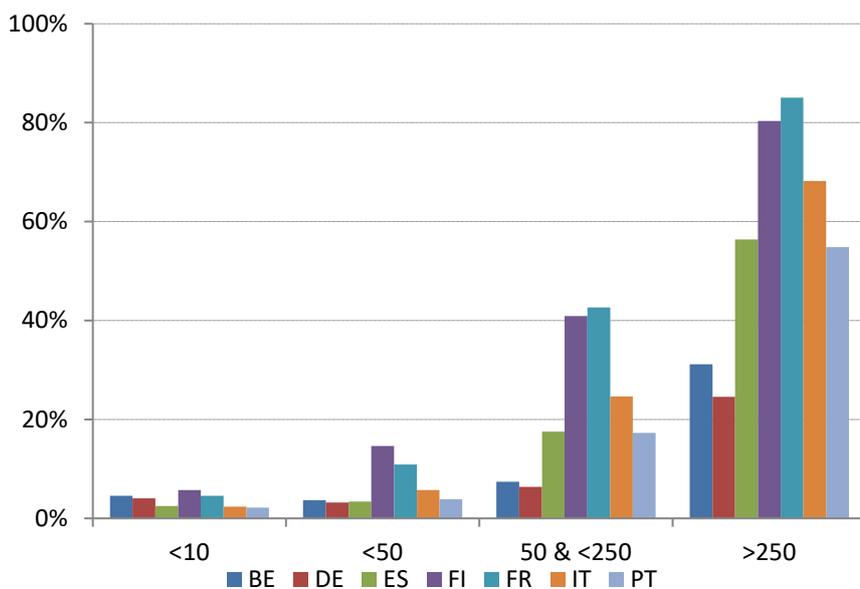
Source: matched database SAFE-Amadeus. All firms (Large and SMEs). In order to compute the SAFE score (Chart a) and MSI Index (Chart b)) we use the coefficients of the estimated survey-based probit with firms-specific variables that come out from the specification in column 2 of Table 6. These coefficients are then applied to the larger pool of firms in the Amadeus dataset in our Eurozone country sample. Period analysed: 2000-2014.

Figure 5 MSI index for SMEs and Large firms across time (2000-2014).



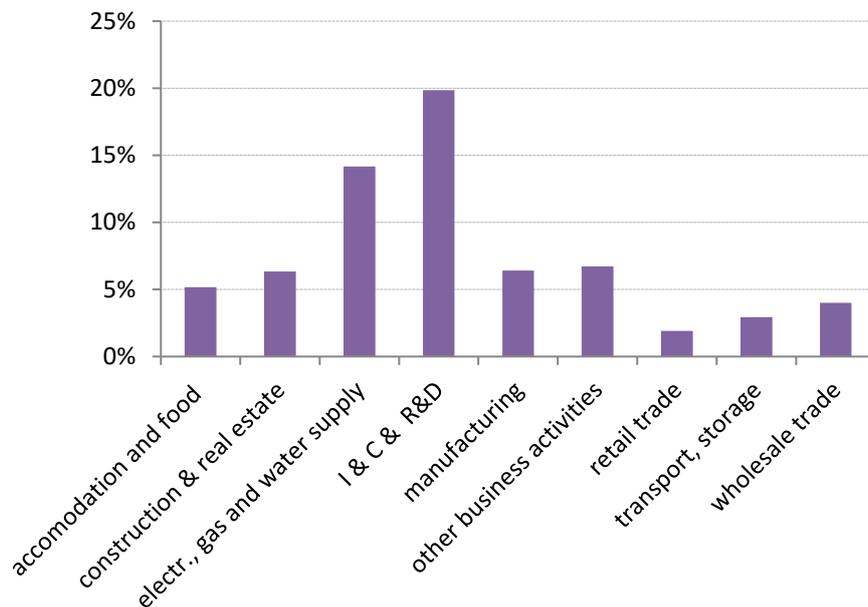
Source: matched database SAFE-Amadeus. The chart displays results of MSI index computed using the estimated coefficients in column 2 of Table 6. To create MSI index we select those firms that are market suitable by introducing a threshold on the SAFE score (see note on Table 7). The MS indicator is equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. SMEs defined as firms with fewer than 250 employees. Period analysed: 2000-2014.

Figure 6 MSI mean value by firm size (based on the number of employees)



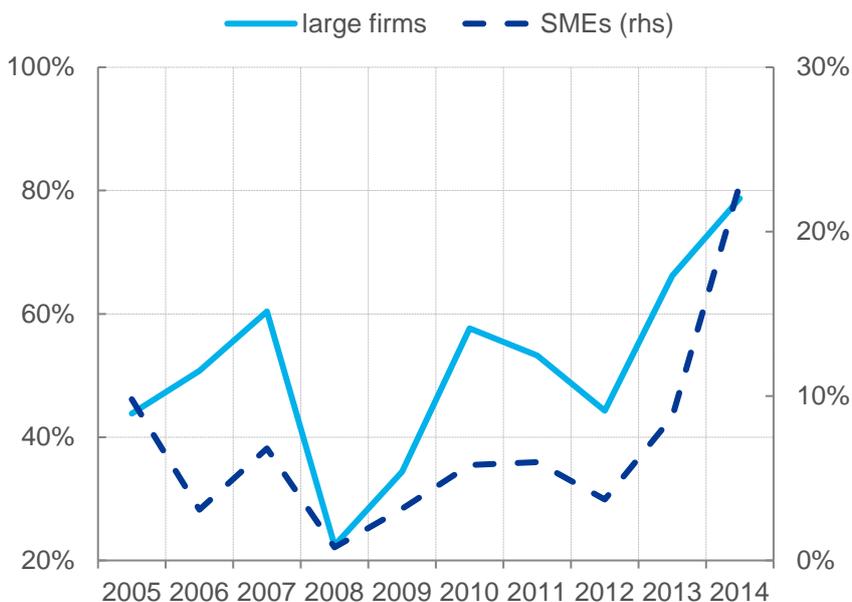
Source: matched database SAFE-Amadeus. To create MSI index we select those firms that are market suitable by introducing a threshold on the SAFE score (see note on Table 7). The MS indicator is equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. SMEs are defined on number of employees. Period analysed: 2000-2014.

Figure 7 MSI mean value by firm's sector



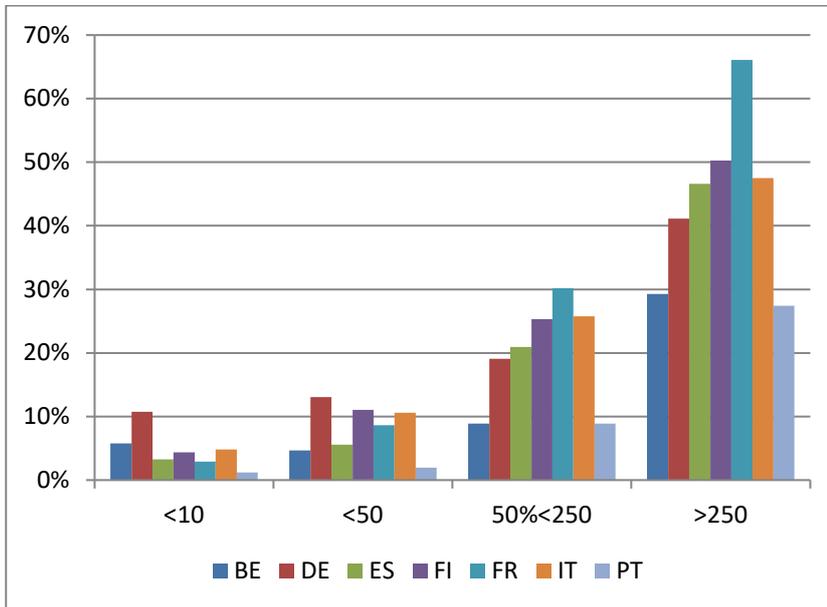
Source: matched database SAFE-Amadeus. All firms (Large and SMEs). To create MSI index we select those firms that are market suitable by introducing a threshold on the SAFE score (see note on Table 7). The MS indicator is equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. MSI value at firm level is then aggregated at sector level in order to have the MSI mean value by sector reported. Period analysed: 2000-2014.

Figure 8. MSI index including country-specific variables for SMEs and Large firms across time (2005-2014).



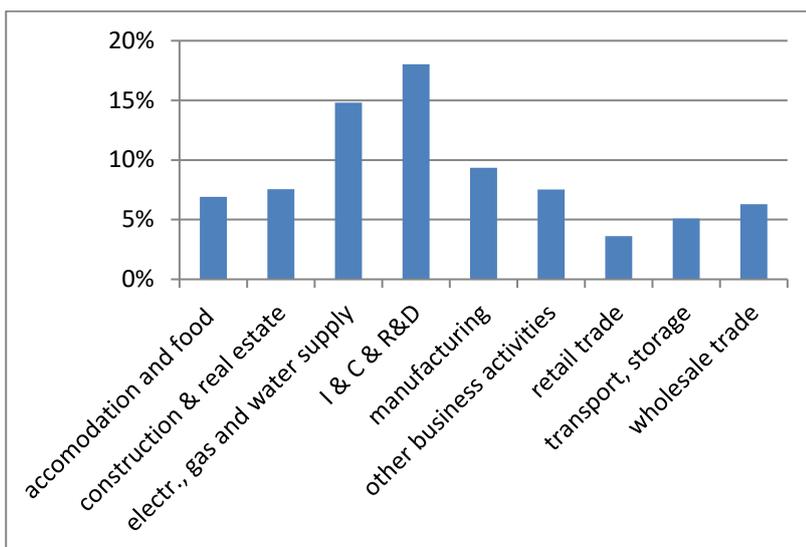
Source: matched database SAFE-Amadeus. The chart displays results of MSI index computed with country-specific variables across years 2005-2014. SMEs defined as firms with fewer than 250 employees.

Figure 9 MSI mean value with country-variables by firm size (based on the number of employees)



Source: matched database SAFE-Amadeus. To create MSI index we select those firms that are market suitable by introducing a threshold on the SAFE score (see note on Table 7). The MS indicator (MSI) is equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. SMEs are defined on number of employees. Period analysed: 2005-2014.

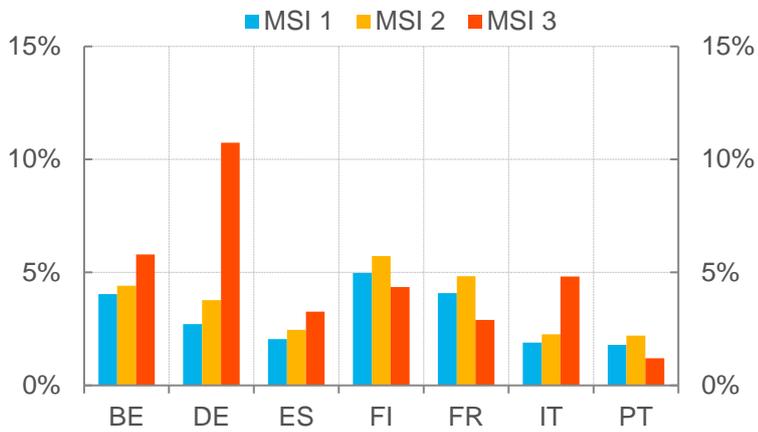
Figure 10 MSI mean value with country-variables by firm's sector



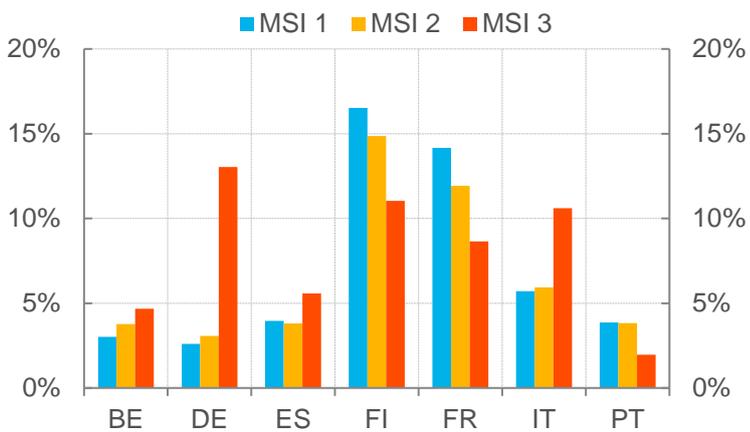
Source: matched database SAFE-Amadeus. All firms (Large and SMEs). To create MSI index we select those firms that are market suitable by introducing a threshold on the SAFE score (see note on Table 7). The MS indicator is equal to 1 for firms with a SAFE score greater than the threshold and zero otherwise. MSI value at firm level is then aggregated at sector level in order to have the MSI mean value by sector reported. Period analysed: 2005-2014.

Figure 11 MSI index by firm size: a comparison (2005-2014)

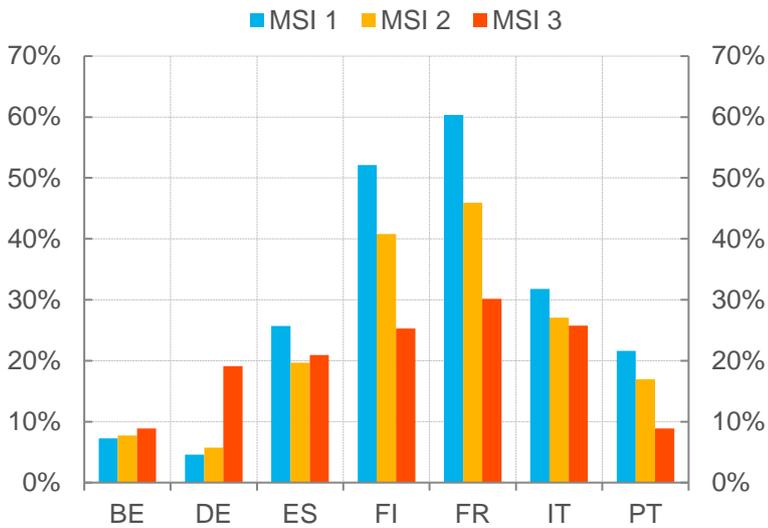
a) Micro firms



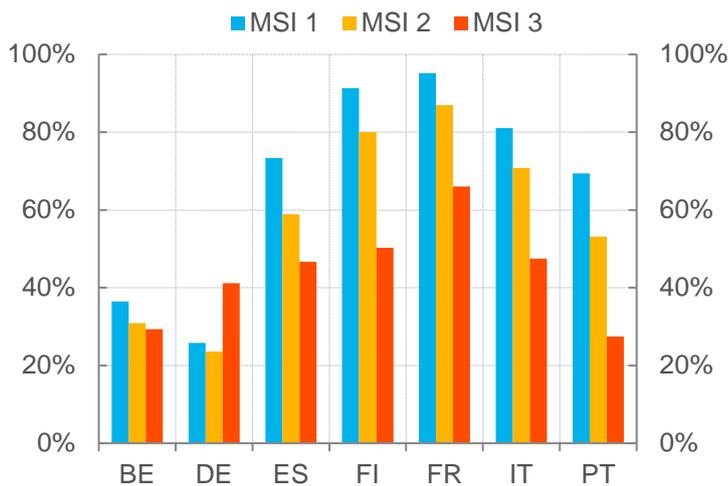
b) Small firms



c) *Medium-sized firms*



d) *Large firms*



Source: matched database SAFE-Amadeus. The MSI index selects those firms that are market suitable by introducing a threshold on the SAFE score derived from the SAFE (see note on Table 7). Chart display results when using MSI index computed: with only firm-specific variables without country dummies (MSI 1), with firm-specific variables and country dummies (MSI 2) and including country-specific variable (MSI 3) according, respectively, to the model specifications of column 1, 2 and 3 in Table 6. SMEs are defined on number of employees.. Period analysed: 2005-2014.

